

# SCUBA

## TIMES

THE ACTIVE DIVER'S MAGAZINE

🐟 DECEMBER 1997

### Sci-Fi Dive Special

**PLUS**

**On the Set of *Sphere***

**PC-Friendly Dive Computers**

**Great Caribbean Family Vacations**

**Photographic Portfolio: Galapagos**

**Buried Alive by Lava...and other Close Calls**



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## A NEW DIMENSION IN POWER



### THE PERFECT KICK

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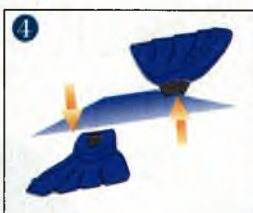
### THE POWER LOSS

A curving down kick causes the inside of the blade to twist upward, preventing maximum force and creating a loss of power.



### THE REALITY

- Due to the weightless situation in water, a down kick causes the body to roll in the direction of the kick.
- The natural kicking motion for humans is an inward kick e.g. kicking a soccer ball or a football. The majority of divers do not have a perfectly flat down kick, the motion becomes an inward curving down kick.



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### SUBTECH II: HABITAT

With the diabolical twist of *Bladerunner*, the slick techno hype of *Aliens* and the pee-your-pants fear of *Jaws*, the slightly deranged *Scuba Times* crew brings you, once again, into the covert underworld of secret agent Gill Gellhead 2.5. This time photographer Curtis Boggs and Art Director Scott Bieberich track our tech-diver-with-good-hair hero as he infiltrates the enemy's deep-ocean habitat and saves the planet from doom, all by using the latest in technical diving gear.

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### LIGHTS, CAMERA, DIVE!

What are Sharon Stone and Dustin Hoffman doing in a dive magazine? Their starring roles in the new flick *Sphere* have them playing scientists who work in a deep-sea habitat to investigate a sunken spacecraft. In this story, the film's safety dive coordinator and STM Contributing Editor Jean Pierce gives us the scoop on what goes on behind the scenes at Warner Brothers.

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### ARE WE THERE YET?

How many times have you heard that on a family vacation? In this edition of Caribbean Currents, freelance writer and devoted father Matthew Costello gives the do's and don'ts of planning a dive vacation for the whole family in the Caribbean.

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### MONA ISLAND — GALAPAGOS OF THE CARIBBEAN

When he was 16 years old, Mauricio Handler discovered the beauty and the dangers of Mona Island on a hiking trip with some friends. Now, older and wiser, he returns to this completely undeveloped island, 40 miles west of Puerto Rico. This time, he speaks out for the preservation of his native soil.

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**Cover Shot:** Scuba diving can take us to the deepest depths of the oceans, into unknown worlds, into landscapes imagined in science fiction minds. Shown are scenes from the movie *Sphere*, in which Sharon Stone plays a scientist (story, pg. 16) and images from Subtech II, the *Scuba Times* sci-fi dive shoot, pg. 7.

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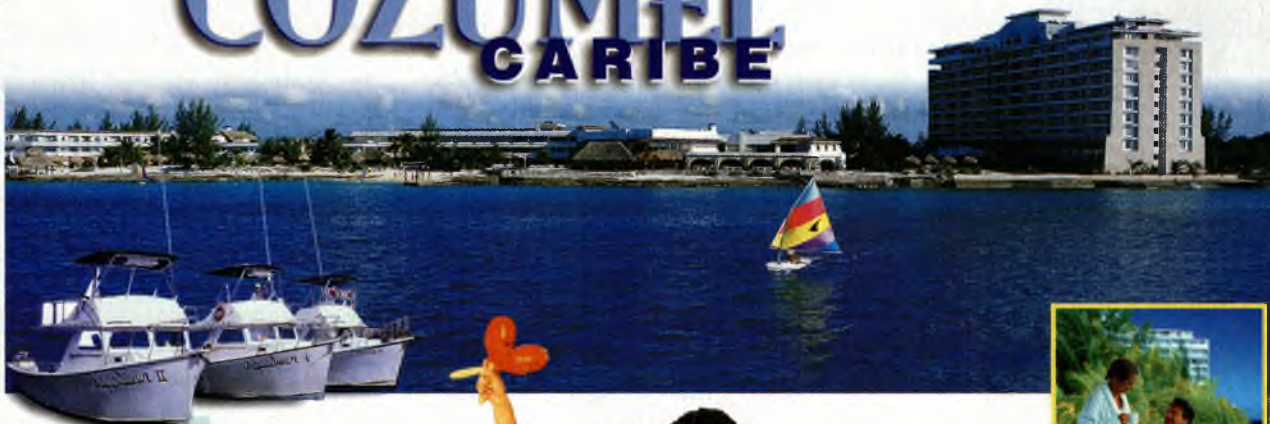
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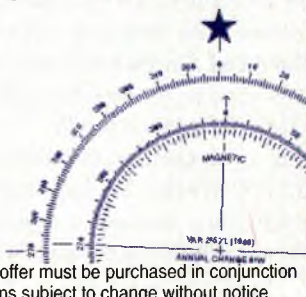
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Sci-Fi Fred

Several issues ago, we produced a slightly deranged article called SubTech about a slippery secret agent named Gill Gellhead (G2). For those of you who recall, G2 crashed a party on a yacht using DPVs, rebreathers and the like in order to get some Grey Poupon for his hoagie. Sure, the Grey Poupon thing was a bit goofy but you have to admit it was fun. Well, we had fun anyway. And, lest we forget, many of us got into diving to increase our fun quotient. Of course, just as importantly as the mustard search was the fact that we utilized the fictional storyline to highlight many of the high-tech products available on the market today. We figured it was better than a stale equipment review and if G2 could use the gear, anyone could.

The response to SubTech was twofold. Some people looked at it and said, "Yeah, those *Scuba Times* guys have finally slipped right over the edge. We could see it coming. It's a clear sign of too much nitrogen, saturating a smattering of weary brain cells." Other readers simply loved it. One lonely reader even wrote G2 a love poem and I was certain that the G2 Fan Club and Stalkers Society was only a step away.

So, for those of you who are certain we've gone mad, please hang on to your pants, we're doing our level best to drag you down into the mire with us. However, if you're a charter member of the G2 Fan Club, I've got good news. He's back. Sort of. This time we've got one of G2's errant offspring, G2.5, who becomes involved in a kind of *Star Wars* meets *20,000 Leagues Under the Sea* adventure. We just call it, SubTech II: Habitat. It's wild, it's whacky, and remember you're allowed to smile.

You'd have thought we had a conference call with Michael Crichton himself. We had been working on this G2 article for about six months, thanks to the creative genius of photographer Curtis Boggs and Art Director Scott Bieberich, when we started hearing about Crichton's new movie, *Sphere*. The film and our article had numerous eerie similarities. They both occurred underwater, they both involved a habitat and they both used an arsenal of high-tech gear to complete the project. The only difference, however minor, is that we used our staff as models (read: free help) instead of Sharon Stone, Dustin Hoffman and Queen Latifah. Hey, I'm sure we could have gotten Sharon for our shoot if we really wanted to (she was a certified diver prior to the film), but she was busy brushing her camel-hair jacket that day. And, of course, the word is Dustin and Queen like the water about as much as a common house cat. It didn't matter though, our models did just fine, especially in the part where they played dead.

Filming *Sphere* had its own bag of tricks, when you consider that much of it occurs underwater. *STM* Contributing Editor Jean Pierce just happened to be in charge of diving operations on the set as well as training all of the actors and personnel. Beginning on page 16, Jean gives us a personal preview of the new movie (due out in November) and what it's like to walk, or shall I say, swim with the stars.

In addition to our SubTech sequel, we've brought back another very popular section called Close Calls which appeared in two consecutive issues of the *Advanced Diving Journal* last year. You know how when you get around a group of divers and each person likes to tell the story of how he almost bought the farm? Well, in most cases, this group of Close Call writers had already paid the down payment, but somehow managed to escape with their lives. We've got two deep diving world record holders (Bret Gilliam and Jim Bowden) and several long-time advanced divers/underwater photo-journalists who tell their harrowing tales.

There's lots more inside — a review of software for dive computers, an overview of digital video cameras and some outstanding photos by the likes of Marty Snyderman and Chris Newbert. So, have fun and let us know whether you'd rather go to the theater and see *Sphere* or our newest hairbrained idea, *SubTech III*, the movie.

That's it from here. Enjoy. ■

*Fred D. Garth*

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**srds**

**MPA**

PRINTED IN THE USA



The year: 2345. The Place: Mother Earth. Like an old episode of the *Twilight Zone*, the planet is a charred wasteland inhabited by lifeless, hairless, braindead drones. Yet beneath the sea, safely housed in their opulent undersea kingdom, a self-indulgent society continues to suck the planet of its precious resources as they live lavish lives of talk show hosts and television evangelists. From time to time the undersea and surface worlds clash as bands of mindless drones are kidnapped into slavery to toil as dental assistants and telemarketers in the underwater hell. One studly young drone is determined to infiltrate his enemy's watery realm. His mission: to return the elusive holy grail of happiness back to his love-starved world. But the task will be daunting, for his quest lies 5,000 feet below, in a harrowing adventure we blithely call . . .

## Subtech II

# HABITAT







**With the SS Crab Pod** safely anchored on the sea floor near the enemy Habitat, our drone hero enters the cold ocean to swim the final leg of his long journey. As fate would have it, this young drone is different from the rest of his moronic comrades in his charred world. Somehow, through a quirk of genetic

chance, he matured among the drones with the brainpower and bathroom habits of a normal, pre-earthen wasteland human. And, he even has hair. As luck would have it, he is none other than the child (thanks to cryogenically-stored sperm) of the most infamous spy of the post-disco 20th century, Gill Gellhead, or as he was affectionately known to the world — G2.

Although it took years of searching through burned-out dive shops and the ruins of old Pep Boy Stores, G2's son, we'll just call him G2.5, was able to piece together a bevy of high-tech diving gear and even build his own Crab Pod with parts from a circa 1972 Dodge Pacer and a John Deere 4800XT Spud Digger. He also equipped himself with a full arsenal of underwater lights, computers, scooters, stun guns and thermal suits for his fateful mission.

As G2.5 makes his move on the majestic fortress, two figures appear in the watery void (above). There's nothing to do but fight like a man-drone as G2.5 is assaulted by the heavily armed perimeter guards. Like a coked-up NBA point guard, G2.5 shucks and jives to avoid the sentry's sonar death blast. Then, at just the right moment, he employs his secret weapon and activates his turbo-charged, electro-Shark Pod, sending the assassins reeling like stunned catfish in a dynamited pond. (above)



Dacor

Soniform

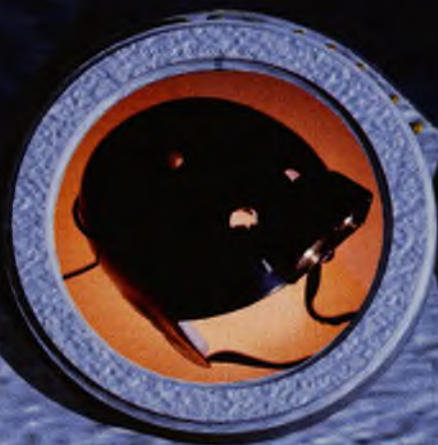
Stream Machines





Success. G2.5 smiles cautiously, knowing that this is but the first step in his death-defying quest.

His rebreather hums silently in harmonic stealth mode with his DPV as G2.5 searches the city's underbelly for an access port. Suddenly he sees it — a hatch (above, right). It's an entrance into a world he only knows from broken fables and muted ballads sung by his ridiculously tone deaf drone clan. What evil awaits him inside? Is the secret of life really hidden here? And, if so, can he return this treasure and free his oppressed people? And, most critically, is there a bathroom nearby? (right) He had soiled his drysuit.



Nite Rider



Torpedo



Dacor





Once inside, he stows his gear and begins his search. But alas, an access hatch had been breached, alerting the elaborate security system. More Borg Guards are dispatched, this time under the command of the nefarious dragonlady, simply known as Vermin.



Oztex

Shark Pod

Henderson





Hot on G2.5's trail, Vermin and her Borgs scan the area. Our hero eludes the death squad masterfully for a while.



Then his intense mental focus slips for a split second as he tries to reconstruct his way back to the bathroom. He knew that second cup of coffee was a mistake. But, that brief mental lapse proves near fatal as Vermin and her team track G2.5 like sharks on a sinking pig.



Cochran

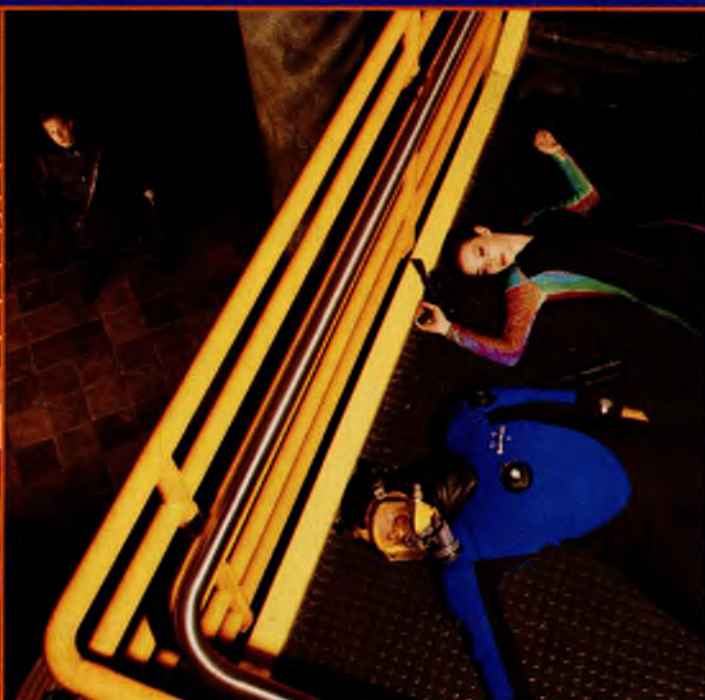


Uwatec



Ocean Technology Systems





But G2.5 is possessed with the spirit of his tribe and the agility of a small house cat as he spins and zaps Vermin and her Borgs with his microwave ray gun which he had prudently set on Well Done. Incapacitated and well, cooked to perfection, the death squad lies still on the cold steel — their evil blood spilled for the cause of freedom. Yes, the cun-

ning and intuitive soul of G2 has successfully been passed to young G2.5. He's a hero like his daddy and a professional with his singular mission still clearly in focus. He must find the computer room and crack the code. The secret of life awaits and the future of his people remains solely in his capable, yet water-shriveled hands.



Soniform



Body Glove



Desert Star Systems





His fingers roar across the computer keyboard like Jerry Lee Lewis on speed as he enters password after password. Chili Dog. No. Screaming Pumpkins. No. Muppet Pig. No. Queen Latifah. No. G2.5 clears his mind and thinks of nothing — a task in which he clearly has great experience. In a flash of the supernatural he hears his father's voice. Wait a minute. Is Darth Vader his father, too? No, it can't be, it's the spirit voice of G2 reciting a totally unfamiliar yet undoubtedly important word. Quickly and

methodically, G2.5 types the letters. J. A M B A I A Y A. Success! Access granted — but what is this strange word? Could it be the secret elixir of life?

A passageway opens abruptly. Bright lights blind him. Bizarre sounds emanate from inside. It's music and it's actually in tune. The smell of spicy food enters his virgin nostrils for the first time ever. What is this extraordinary place? It's a hidden chamber they call a tavern, a bar, a pub, a juke joint, a place of debauchery and imbibery — the Big Easy. And G2.5

thinks he likes it. In fact, he knows he likes it. He believes he has finally found his home and, amazingly, there are other humans with hair very much like his. Oh yeah, life is suddenly good.

Music, chilled refreshments, camaraderie and, of course, hot and spicy jambalaya — yes, he has certainly discovered the secrets of life. Now, the question is, will he return to his lifeless world and free his people from their bondage to boredom? Or, will he even try? So far, he kind of likes it here.

What will happen to the hapless drone nation? The answer lies within the heart and soul of G2.5 and in the next episode of SubTech. Be there.



Diamond USA



Princeton Tec



Diving Unlimited International





## Inside G2.5's Gear Bag

Here is a run-down of the high-tech gear used for the Subtech Mission

**Body Glove** 6.5mm nylon-2 drysuit with nylon/smoothskin wrist and neck seals and a shoulder entry zipper. All seals are glued, blind-stitched and heat taped (\$695) • (800) 678-7873

**Cochran Technology** Nemesis IIa nitrox dive computer with taclite display. The computer model adjusts based on workload, ascent rate, water temperature and previous dive profiles (\$1170) • (972) 644-6284

**Dacor** Pacer Ice regulator features a dry-sealed first stage. The internal components of the second stage are Teflon coated to prevent icing and the regulator is CE certified (\$365) • (847) 446-9555

**Dacor** Sea Sprint diver propulsion vehicle. Double o-rings give it a depth rating of 160 feet and a handle-mounted locking switch prevents accidental activation. Adjustable pitch propeller allows for three speed settings (\$1890) • (847) 446-9555

**Desert Star Systems** Diver Tracker Sport is a two-part system (transmitter and receiver) that allows divers to travel up to 2000 feet from an anchor line or other entry point and then safely return. Depth rating is 1000 feet (\$498) • (408) 384-8000

**Diamond USA** Saxon 2000 Trilaminate drysuit has durable butyl rubber welded between two layers of heavy duty nylon with Kevlar knee pads, a SI-Tech valve and BDM zipper. The suit includes a three-year zipper warranty and lifetime seam warranty (\$1360) • (800) 581-7030

**Diving Unlimited International** CF 200X drysuit is made of patented crushed neoprene with latex seals. Entry is via the diagonal torso zipper while crotch and ankle straps assure a proper fit (\$1998) • (800) 325-8439

**Henderson** Trilaminate dive skin is made by laminating Polartec fleece to lycra allowing four-way stretch and 2.5mm neoprene warmth (\$230) • (609) 825-4771

**Nite Rider** NR 4000 dual beam scuba light allows the ultimate in lighting versatility. The 12- and 20-watt lamps are powered by a 13.2-volt rechargeable nicad battery and can operate simultaneously (\$694) • (619) 268-9316

**Ocean Technology Systems** Buddy Phone with the Interspiro MKII-G fullface mask uses a waterproof noise-canceling microphone giving the system outstanding intelligibility at ranges of 500+ yards. A single 9-volt battery lasts eight hours (\$1150) • (714) 754-7848

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**Uwatec** True Track electronic compass is the world's first underwater digital compass. Can be programmed with nine headings, has an integrated timer and gives course corrections (\$325) • (800) 951-3483

PHOTOGRAPHY BY CURTIS BOGGS

UNDERWATER PHOTOGRAPHY BY BETSY ARCHER

ILLUSTRATION BY CURT BOWEN

*Special thanks to Aquarium of the Americas, New Orleans, Louisiana  
Subtech was shot on Kodak E100s slide film.*





## Keeping Current

Greetings from Montego Bay Marine Park, Jamaica. We have recently begun receiving your magazine. As our Park Rangers and Scientific Officers dive regularly as a part of their occupation, it is vital for them to be up to date on the latest scuba information.

Sincerely,  
Josh Cinner

## Divers Are Snorkelers, Too

I'd like to urge *Scuba Times* to mention the snorkeling possibilities at the many diving destinations you cover. Yes, I know this is a scuba magazine. *Scuba Times* is the best magazine on recreational as well as professional diving, as you know. There is no equally good magazine for coverage of snorkeling. Divers with children or mates who don't dive might want to know whether the great destinations you cover would offer something for their companions.

And divers themselves can't dive all day. Many I know enjoy a relaxing early morning or evening snorkel. So even your

avid divers would find a mention of the snorkeling possibilities useful information.

Thanks for a fine magazine.

Susan Crane  
New Brunswick, NJ

Dear Susan,

Check out *Caribbean Currents*, page 19. We shift the focus onto diving and snorkeling trips the whole family can enjoy.

## Mistaken Identity

Regarding the August, 1997 edition of *Caribbean Currents* on Bonaire — You'd be driving all day to find the dive site "White Slave" mentioned in your article. Why? It doesn't exist. Could you be thinking of Red Slave?

Shirley LaMear  
Pacific, MO

## Abolish What?

Tom Morrissey's article, "Abolish the Buddy System?" (August, 1997) was essentially 'make words.' But, he did bring up a good subject for discussion. Of

course, the 'buddy system' has never existed. We know this because it can't be defined (go ahead, try it). So, if it never existed, it can't be abolished. . . right?

Fred Calhoun

Dear Fred,

Okay, we'll try — Here goes! Buddy system: when one diver dives with another as a companion or "buddy." Isn't that the definition? Are we missing something? Hello in there!

## Well Done!

Thank you for publishing an excellent magazine and posting a fantastic website! The resources available to divers are nearly unlimited and stand in stark contrast to the advertiser-paid propaganda so prevalent in other magazines. Well done!

Ted Scofield  
via Internet

Address letters to *Scuba Times Magazine*, 14110 Perdido Key Drive, Pensacola, Florida 32507, or via email at [katies@scubatimes.com](mailto:katies@scubatimes.com). You can visit our Internet site at [www.scubatimes.com](http://www.scubatimes.com) — Not all letters can be published and may be edited for space and clarity.

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Dustin Hoffman and Sharon Stone star in the new sci-fi blockbuster *Sphere*.

# LIGHTS, CAMERA, DIVE!

## HOLLYWOOD GETS CERTIFIED

TEXT BY JEAN PIERCE

Warner Brothers' *Sphere*, based on Michael Crichton's psychological thriller by the same name, opens in December. The plot has a team of scientists, played by Dustin Hoffman, Sharon Stone, Samuel L. Jackson, Peter Coyote, Queen Latifah and Liev Schreiber, descending 1,000 feet to the bottom of the ocean to investigate a mysterious spaceship. They live in an underwater habitat and explore the depths in commercial-type diving helmets created for the film by Diving Systems International.

Contributing Editor Jean Pierce and instructor Kris Newman, owners of Independent Scuba in Napa, California, managed *Sphere*'s on-site dive operations at Mare Island Naval Shipyard in Vallejo, California, and prepared the cast for their watery venture. During the production, 3,313 scuba tanks (80-cubic-feet) were filled to accommodate a crew of 65 along with 12 safety divers, six stunt doubles and the cast. The divers logged an incredible 5,224 hours underwater. The Second Unit — Team Hydro, directed by David Ellis — actually wrapped ahead of schedule.

I'll never forget the day I met Sharon Stone. Our safety team was working on the dive deck while the puppeteers were in the water manipulating their jellyfish for the cameras. Producer Andrew Wald brought Sharon up the high flight of steps leading to the top of our enormous water tank. She was wearing a long, camel-colored coat although it wasn't particularly cold that day.

Nearby, we had neatly arranged the helmets and neck dams that the stunt doubles would don later that morning. Andrew asked me if I'd bring one of the helmets over to show Ms. Stone.

Safety diver Frank Sparks was just getting out of the water. On a set, delays of any type are never tolerated, and I knew I could rely on Sparky to hustle and give me a hand with the 35-pound helmet. This former Navy Seal stands about five-feet-four, but is a tough little package of sinew and muscle.

In one fluid motion, Sparky slung on his long, black dive coat and grabbed the nearest helmet. Together we walked over to Video Village where Sharon was sitting in one of the high-backed director's chairs emblazoned with the silver *Sphere* logo.

As I began to explain some of the functions of the helmet, she turned, held out her hand, and said, "Hi. I'm Sharon Stone" (as though I didn't know).

Throughout filming, Sharon would have to perform many of her scenes wearing a 90-pound backpack, 12-pound weighted boots, two battery packs and

a five-pound flashlight.

Otherwise, the comfort level for both cast and crew on the *Sphere* set was ideal. Underwater filming took place in five giant steel and cement tanks, all housed in a single enormous warehouse. The water was fresh, filtered and heated to a bathwater-warm 87 degrees. At only 16



photos c/o Warner Bros.



feet of depth, nitrogen buildup wasn't a concern — a boon for us, who managed the diving and safety systems. Nevertheless, the recompression chamber at Travis Air Force Base was on alert.

During pre-production, we had set up a mobile dive shop just outside the warehouse, complete with dual air compressors, a 10-tank fill station that my partner Kris designed and constructed, and 150 scuba tanks. When the diving crew arrived, we inspected their gear, checked their regulators at a flow bench in our repair and equipment van, and gave them an in-water skills evaluation. We hung their gear in a heated trailer where it would be warm and dry for the next morning. The 'piece de resistance' was a heated, bubbling spa that welcomed any diver who was still chilled.

Meanwhile, down in Santa Barbara, Bev Morgan had every one of his workers at Diving Systems International feverishly making *Sphere's* new movie helmets. As co-inventor and manufacturer of the Kirby-Morgan commercial dive helmet, Bev and his team, including Trent Schultz and Bob Christiansen, could possibly have been the only ones who could pull off such a feat in so little time.

Together with DSI, Kris worked out a training program for the cast after first training and cross-training the stunt doubles and safety divers. In rescue scenarios

in the Mare Island swimming pool, they practiced quick-connects with umbilical hoses attached to scuba tanks.

Logistically, the movie called for a lot of underwater action which required planning. Amazingly, everything ran smoothly on the set. Safety divers carried umbilical tanks over their shoulders most of the time which were connected to the helmeted divers. This provided the helmeted cast and stunt doubles with a constant, comfortable flow of air. When filming began, the safety divers would disconnect the hoses from the helmets. The backpacks the actors wore, made to look like rebreathers, actually contained two 50-cubic-foot scuba tanks manifolded side-by-side.

Fortunately, underwater communication with the director topside and among the divers greatly enhanced safety. Even during training, Kris used an Ocean Technology Systems EXO 26 mask to communicate with the cast, which catapulted training enormously (see related story, pg.70).



Queen Latifah is attacked by jellyfish.

#### The Cast of Divers

One of the challenges of working on a movie of this scale is training non-divers and non-water people to be comfortable in their diving roles. Peter Coyote, who made it known that anyone can "drown in a bowl of chicken soup if it goes down







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the wrong pipe," later admitted, "I became so relaxed underwater that several times, waiting around for lights and camera to be readied, I fell asleep in my diving suit and had to be poked awake to go to work."

None of the cast was required to be scuba certified, but almost all wanted to plunge in. Only Sharon and Liev already had C-cards. Peter managed to complete all of his open water study and pool work on the set, and regretted not having more film time underwater.

Samuel L. Jackson, who plays the role of Harry, had aspired to be a marine biologist in college before he discovered his chosen career, so he was ripe for lessons. He nearly finished his open water work on the set, despite having to dash down to Los Angeles on the weekends to work on yet another movie.

Queen Latifah has the most challenging underwater role (Fletcher) in the movie, but was probably the most hesitant to wear the dive gear. Kris devised a series of games — task-loading exercises — that helped all of them to forget about being underwater. As a former swimmer and basketball star, Queen particularly enjoyed the athletic exercises.

One day Kris arranged a number of divers in bowling-pin formation on their knees. Queen tossed a heavy bowling ball along the bottom of the pool, rolling it down a mock alley. All the divers, of course, fell over — strike! Then, suddenly, Queen fell over and began thrashing around in full helmet/backpack gear. For a moment, I thought something terrible was wrong, then realized she was just practicing her part. As she batted away the imaginary deep-sea jellyfish attacking her, a chill went up my spine, and I knew she was ready for filming.

Dustin Hoffman (Norman), admittedly not a water person, easily mastered the helmets, but during a free diving scene hit his head on a bulky camera housing. As a trickle of blood made its way down his forehead, he finished the scene like the pro he is, and thereafter had to be artificially "bloodied-up" for subsequent takes.

And Sharon (Beth)? On the last day of filming she opted to stay in the water and play between takes while the camera operators changed film. As music played on the underwater com, filling the huge tank with sound, Sharon and Kris (her safety diver) danced the waltz, boogied a bit and even played a game of tic-tac-toe.

Then she and Sparky played hangman. ■

*Jean Pierce is an STM contributing editor and instructor to the stars.*



## A Christmas Story

Alas, it is Christmas once again and little Johnny "the-book-bandit" Jones will not make it home for the holidays. This season of merriment will be one of misery as he celebrates behind the cool steel bars and razor wire of Bad Boys Youth Correctional Facility (also known as BaBY CuFs).

It happened when Johnny didn't get the present he wanted - a coveted subscription to Scuba Times Magazine. A crummy Tickle-Me-Elmo was his pitiful gift instead, given by his thoughtless loved ones. So Johnny turned to a life of crime. He hit the local bookstore and swiped several copies of Scuba Times, a heinous, but comprehensible crime indeed - punishable by three years in exile. Yes, the lad desired only to read the greatest dive magazine available today; for this, society has shunned him.

We cannot undo the past, but we can prevent the corruption of future generations. To help ensure that Johnny's sad story does not repeat itself, please give a STM gift subscription to all your loved ones under the age of 102. It could make all the difference.

There is a bright spot in the story after all. Johnny finally got his subscription money from long hours of cleaning prison bathrooms. He's a happy subscriber in cell block G, #462. HO! HO! HO!

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# CARIBBEAN CURRENTS

## ARE WE THERE YET? A Parent's Guide to Family Dive Vacations

TEXT BY MATTHEW J. COSTELLO

**I**t's a diving parent's nightmare. I was about to set off on a well-planned, dream dive vacation to Grand Cayman. Everything was prearranged, from the daily two-tank dives to reservations at the best restaurants. What could go wrong?

Need you ask? I was ready to hop the plane for the Caymans when my 6-year-old decided to sprout a bumpy little rash. Chicken Pox came to roost, and the rest of the family exploded into tears imagining their mid-February 'sizzling in the sun' replaced with dull, gray Northeastern skies and a slushy backyard.

I did the only thing I could do.

"Go," I said. "I'll stay with poor, 6-year-old Chris" (who was perhaps the saddest of the lot). "Go have fun, look at the dive boats. Dig your toes in the warm sand. I'll stay right here, nursing Chris, watching videos."

I'm a Dad. It's my job.

But my staying behind had another effect on the family vacation — more than just missing out on lots of bottom time. My 12-year-old daughter, Nora, was going to take the resort course — her first step into the world of diving.

And while I pictured my daughter discovering the underwater wonders of the Caymans, what happened was something else entirely. Nora never got down below three feet of water. As she tried to descend down the line with the group, she felt pain in her ears. Nora, determined not to miss any more great family diving trips, tried



More and more Caribbean dive resorts are catering to families by offering kids' programs and discounted fares.

© Clara Taylor Bennett

**CARIBBEAN CURRENTS** will be published in every issue of *Scuba Times*, covering the Big Six: Bahamas, Bay Islands, Belize, Cayman, Cozumel and the ABCs. The Big Six are defined as the six destinations which are visited by more divers each year than any other dive destination.

everything she could to get down. But she had to sit out the rest of the dive on the boat.

Luckily, there were enough non-diving distractions in the Caymans to salvage the vacation from disaster. But Nora was still bent, (or should I say sold), on the idea of learning to dive. I only wished I had been there to lend my fatherly support as well as my diving advice. As a parent, and also a diver, I was certain that my presence would have made a difference.

Now fast forward three months and I take my daughter to Belize, to Ambergris Caye and a second attempt to bring her into the fold of the true believers. This time her initial dive (and some stunning follow-ups) were great successes. And though I was on the scene, I might as well have been on Mars. The difference this time was her comfort level and the careful instruction she received at Reef Divers.

Larry Parker's Reef Divers was recommended to me by Randy Astheimer, the



owner of The Palms condos on the Caye. "He's trained just about everyone on the island," Randy said. The boat picked us up at our condo, right next to the tiny town of San Pedro. My daughter's instructor gave her what turned out to be a private class, constantly reassuring her, checking that she had the basic skills essential to the NAUI Passport program.

When it came time for the dive, it was a hot, quiet afternoon. Since there was no platform for a giant stride, my daughter was forced to perform a backward roll. I knew that all she could imagine was smacking her head into the boat. She looked at me with the wide eyes of an alarmed grouper.

But Larry calmly talked her through the procedure, checking that she held her mask and regulator snugly against her face and splash! — she was in the water giving us a big OK.

From there, the dive became a dream of what a first dive should be — a nice, easy descent, plenty of buddy checking and good buoyancy control. While she didn't seem to need me, Nora still looked over occasionally, checking that I was nearby. But she was in great hands and the world of diving was about to open for her.

As more and more divers bring kids with them on their dive vacations, resorts and dive operations are quickly responding with special programs and deals for families. But there are steps Caribbean-bound parents should take to ensure that their kid's first dive will be an exciting and safe one.

First, plan ahead. Whether you will have a spouse and kids joining you in the world of diving, or if you'll want special programs for non-divers, planning guarantees that everyone has the best possible time. To get you started, we took a look at a few family-friendly programs and destinations in the Big Six — the ABCs, Bahamas, Bay Islands, Belize, Caymans and Cozumel.

## COZUMEL

"The key thing in a successful introduction of a teenager to diving is the one-to-one relationship of instructor to student," said one Cozumel dive operator.

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Junior certification courses give kids the chance to learn respect for the oceans at a young age. Here, 13-year-old Kristen Kamberger takes the plunge.



on the island of Cozumel, many of them small mom-and-pop businesses, it's easy to find a shop that offers resort courses for small groups. In most cases, a resort course will be a class of one — ideal for a teenager. For non-diving children or spouses, many Cozumel dive operators run snorkel boats that go to some of the same locations frequented by the divers. Another plus for families is that only a small part of Cozumel is developed. Everything is close by — important when different members of the family are diving, snorkeling or snoozing on the beach.

To accommodate families, many of the dive shops, such as Staff Divers, has a discount for teens who want to get their open water certification with their parents. The normal fee is reduced for groups of two to three people, and even more for four to eight. The course includes four beach dives, two boat dives and all equipment.

Blue Bubble Divers also specializes in personalized attention for small groups.

For divers with younger family members, hotels like the Melia Mayan

Paradisus offer full children's programs to keep the kids entertained while Mom and Dad explore the reefs.

Victoria and Felipe Quinones of Cinpatica, a small family-run dive boat, say, "We handle every family differently. Many times the younger member of a family is finishing certification. We encourage the rest of the family to tag along on the first two open water dives so they too can check out their equipment and buoyancy while the kids are finishing up."

For non-divers or when the waterlogged family wants something different, Cozumel has plenty of parks, museums, and activities. One great place is Chancanaab Lagoon with a marine park, botanical gardens, restaurant and an open air anthropological museum exhibiting artifacts that were found locally. Non-divers can enjoy Cozumel's world-famous snorkeling above the shallow reefs. Ferry boats take passengers to Playa del Carmen to shop, to visit the ruins of Tulum overlooking the sea, or to the extensive ruins of Chichen Itza further inland.





© Wayne Hasson

Children too young to dive, can encounter marine life throughout the Caribbean with snorkeling programs.

## CAYMAN ISLANDS

The very closeness of the Cayman Islands to Miami makes them a popular vacation spot, and they're justifiably famous for the stunning visibility, terrific wall dives and Stingray City. And the Caymans cater to families, especially during holiday periods.

Grand Cayman is crawling with great, efficient dive operations. But if you're looking for the personal touch you should plan your children's first diving experience carefully. If you dive with one of the big operations, try to find out when classes or trips will be less crowded. As an option, consider a one-on-one guided dive. This can be a bit pricey, but it may make that first dive a successful one.

The Hyatt runs a children's camp so that parents are free to dive with their older teenagers while the little kids visit the turtle farm. For snorkeling family members, a number of operators offer full-day trips. Ron Ebanks (among many others) runs both a full-day and half-day snorkel trip, including one to three different snorkeling spots (including Stingray

City) with a stop for a conch lunch, caught and cooked on the beach. And, speaking of Stingray City, it's possible to arrange a trip where non-diving family members go snorkeling while you enjoy what's billed as the "best 12-foot dive in the world."

Another underwater Cayman adventure for the family, divers and non-divers alike, is the Atlantis Submarine. This

commercial sub, which leaves from Georgetown, seats 48 passengers and descends to 100 feet. Team Atlantis divers accompany the sub on scooters, feeding fish, entertaining passengers with somersaults and speaking directly into the sub's P.A. system through a communications mask. The ride is a great way to introduce young children to the underwater world.





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The inverted fishbowl. Young and old alike can stay dry and see fish on the Atlantis submarine in Grand Cayman.

5716

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Atlantis also runs two smaller research submersibles that can take a party of two plus the pilot down 1,000 feet, a unique deep-sea adventure for children and adults alike. Another Atlantis submarine runs out of the island of Aruba.

### **ABCs.**

**Aruba** – The small, Dutch island of Aruba is taking giant strides to draw families in through an island-wide program called, “Kids Are Cool — Kids Are Free.”

Under the coordination of the Aruba Tourism Authority, most major hotels on the island are running programs where kids age 12 and under stay for free.

As Lee Ann Zehnder, a spokesperson for Red Sail Sports on Aruba, points out, diving families is “a trend we’ve been noticing. We know how expensive a diving vacation can be.”

Red Sail is translating the island’s initiative into their dive operation so that teens age 16 years and under can dive free with their parents between May 1 and September 30. La Cabana Beach Resort, among many others, boasts a program where kids stay and eat free during the summer months. And the Hyatt runs a children’s camp similar to the one on Grand Cayman.

**Bonaire** – The stunning off-shore diving and snorkeling makes Bonaire one of the easiest, most accessible dive destinations for families. Even non-diving family members can sit on the beach and watch the divers and snorkelers disappear beneath the water. But Bonaire also features one of the best programs for families that can be found. (This was echoed by a Minister of Tourism from a different Caribbean island).

Bonaire’s Sand Dollar Condominium Resort’s aggressive program is meant to

seriously attract diving families. They operate the Sand Penny Club for ages 3 to 6. Every morning, kids can have fun with arts and crafts, play games in the pool, and eat hot dogs while parents and older siblings head out for a two-tank dive.

The resort’s dive shop operates the Ocean’s Classroom program for kids ages 6 to 15. Ocean’s Classroom is a discovery-based snorkeling program featuring hands-on learning about the ocean and its inhabitants. Held in a special classroom on the dock at the Sand Dollar, the snorkeling sessions begin in the pool and then move to the incredible off-shore reefs. An optional snorkeling certification program is available.

**Curaçao** – The Curaçao Underwater Park in Willemstad is a natural destination for families. With nearby reefs and wrecks, it’s great for off-shore diving and snorkeling. In the nearby Seaquarium, a family of divers and snorkelers can preview the animals waiting offshore. The Seaquarium also offers an Animal Encounter experience where divers can feed sardines to stingrays, stroke them and even (through plexiglass) feed nurse sharks and sea turtles.

The Princess Beach Resort and Casino is close to the Seaquarium, home to Peter Hughes Princess Divers. Families can dive and snorkel right from the beach of the Princess Beach Hotel, making it easy for divers, snorkelers and even sunbathers to enjoy the same location.

If you’re looking for a smaller operation, Eric and Yolanda Wenderfoort run a PADI operation from their home. They are experienced instructors, offering quality instruction and shore dives. An escorted dive with a divemaster is available, something that can make a big difference in a teenager’s first real dive.



## BAHAMAS

The numerous cays and islands of the Bahamas offer a diverse diving experience. From the cosmopolitan flair of Nassau to the remote beauty of the Out Islands, the Bahamas have some of the most varied dive sites in the world. And many of the dive operators throughout the island have discount packages for diving families.

Stuart Cove is a firm believer that the future of diving depends on "attracting young people to the sport." At his Dive South Ocean they recently launched a Juniors Dive Free program. Cove cites PADI's statistics showing that the number of junior divers (ages 12 - 15) receiving scuba certifications has doubled in the last two years. Cove hopes that "by getting young people excited about dive travel now, they will continue to dive and enhance their diving experiences as they get older."

Small Hope Bay Lodge, on Andros Island, is another truly family-friendly dive resort. Of course, the big attraction is the Andros Barrier Reef, the third longest in the world. But there are also lots of safe places for little kids to explore, with many nearby tidal pools, nature trails and shore-side reefs for snorkeling. Run by the Birch family, Small Hope Bay, like a lot of resorts, is doing what it can to make it easy for families to dive together, offering specialty instruction, family-style meals in the lodge, games, kids' programs, music and nightly presentations.

Low rates for teens and complimentary scuba lessons are available. For those teens who want PADI or YMCA junior certification, there's a special rate during the summer months, and the more family members who take the course, the lower the rate. The resort has added an excursion to Fresh Creek, a tidal waterway that extends some 20 miles inland. Some bottlenose dolphins have taken up residence well into the channels of Fresh Creek — offering families the chance to see them up close and even snorkel with them.

## BAY ISLANDS, HONDURAS

The Reef House in the Honduran Bay Islands is a family-run operation and it shows in their approach to junior divers. The instruction is handled by a husband and wife team who, Reef House Manager Jeanne Bogan says, "are especially good with young people." The financial crunch of accommodations is eased by their policy of triple or quadruple occupancy.

In the Bay Islands, the entire family can take some day excursions to far away locations. One beautiful trip is out to Barbaretta Island and the Pigeon Keys.



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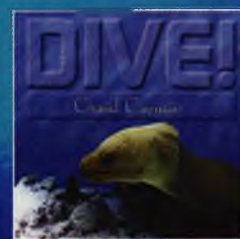
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The small islands of the Pigeon Keys are a great location for snorkelers, who are always welcome to accompany divers.

Long-time Bay Islander Doc Radakowski now runs guided snorkeling programs from CoCo View Resort and Half Moon Bay Cabins to the reefs. The program consists of three lectures on such topics as reef ecology and basic snorkeling techniques and then two snorkel trips.

While you are out exploring the reef, your children can have an incredible experience swimming with dolphins. The Dolphin Discovery Camp at Anthony's Key Resort is a week-long program where kids ages 8 to 14 not only learn about bottlenose dolphins, they get to interact with them. After snorkeling lessons and activities that teach children about dolphin evolution and physiology, kids get to snorkel with them. This may definitely be a case where you come back from your dive to discover your kids had an even cooler experience than you did. The week-long program includes all meals, dolphin camp activities and materials. The resort is located on the eastern end of the island of Roatan.

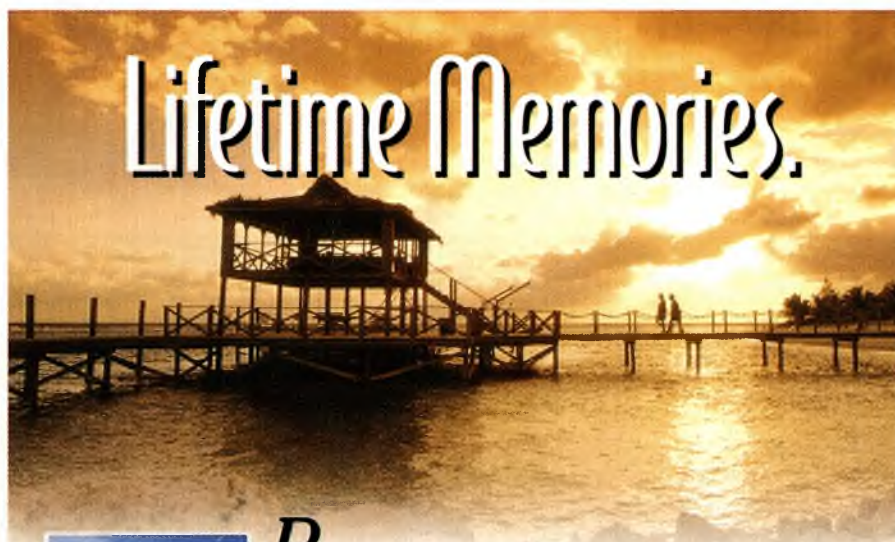
## BELIZE

Ambergris Caye in Belize is where my daughter discovered the joy of diving and despite the number of cayes and atolls available, Ambergris Caye remains one of the best over-all destinations for a diving family.

The dusty town of San Pedro, navigated by golf carts and bicycles, offers everything from tiny ice cream shops to bakeries where you can buy bread fresh out of the oven. The Caye is also home to some fantastic reefs and wrecks. On my daughter's second dive, we went to a wrecked barge. With no marker, we had to troll one of the divemasters behind the dive boat, searching for the right spot.

And when we finally found the location, it made for an exciting dive — especially when we spotted an eagle ray and hawksbill turtle.

But Ambergris Caye only scratches the surface of Belize's diving opportunities, that range from the reefs of Lighthouse Caye and the Turneffe Islands to the dark wonder of the Blue Hole. And if you're traveling with kids, you especially shouldn't pass up the experience of the mainland's rainforest. Belize has a number of incredible Mayan ruins such as Xuantuich and Altun Ha, and, in the deep jungle, there's a resort that's a sure kid pleaser — Jaguar Paw, where each room is air-conditioned and decorated in a different theme, from the Serengeti to Elizabethan England. With great guides, a



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gourmet restaurant (with a bar to match) and a physical setting that is nothing less than jaw-droppingly beautiful, Jaguar Paw is not to be missed on your way back from one of the Cayes.

#### A Few More Tips

Liveaboard diving is another alternative for Caribbean-bound families. Since the Bahamas covers such a vast area, liveaboard diving is prevalent, and the list of operators is extensive. In the ABCs and Cozumel there are no liveaboards. In the Bay Islands, you can choose between the Peter Hughes' *Wind Dancer* and the *Bay Islands Aggressor*. Travelers to Belize can choose between Peter Hughes' *Wave Dancer* and the *Belize Aggressor III*. And plying the waters around the Cayman Islands is the *Cayman Aggressor III* and *Little Cayman Diver*.

**Bigger is Not Better** — A big dive operation with a lot of boats and a steady stream of newbies waddling into the hotel pool is ill-suited to give your nervous 13-year-old the guidance she needs. A small operation might have only one or two people in a resort course. Look into these smaller dive operators or pick courses that aren't filled.

**Are They Comfortable With Kids?** — My daughter was equally concerned about the state of her ponytail and her scrunchies as well as her air supply. With more teenagers joining their diving parents, divemasters and instructors need to be sensitive to the needs and personalities of teens. Talk about this beforehand with the owner of the dive operation and maybe together you can pick an especially good teacher for your teenager's course.

**Discuss the Dive** — Introducing your teens to the world of diving can be a real bonding experience. "It's something you can share with your kids forever and ever," says Theresa Detchemendy of Rascals in Paradise, a travel agency based in San Francisco, specializing in family travel. She encourages parents to expose their children to the water through snorkeling and diving.

Your teen will be much less anxious if she knows where she will be diving and what she might see. When Nora tumbled into the water off Ambergris Caye, we both knew there was a good chance of spotting an eagle ray as well as the hawksbill turtle. Both showed up. What could have been alarming became a moment of thrilling discovery. ■

*Matthew Costello, a New York-based writer, is a contributing editor of Games Magazine and a regular contributor to the Los Angeles Times. His oldest son is also a diver.*

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# MONA ISLAND

## Galapagos of the Caribbean

TEXT AND PHOTOGRAPHY BY MAURICIO HANDLER

Forty miles west of Puerto Rico, Mona Island rises from one of the ocean's deepest channels. Its rustic, natural beauty attracts a rich and varied selection of wildlife, earning it the title, "Galapagos of the Caribbean."

The steep cliffs of Mona Island provide a home for rare iguanas, a sanctuary for fish and a resting place for birds. Though protected by Puerto Rican law, the island is threatened by human impact.

I am circumnavigating Mona on foot. The cactus-filled landscape reaches temperatures of 100 degrees. Extreme humidity does not help ease my despair. Two friends and I have walked half of its 20-mile radius, mostly along the edge of its 200-foot tall cliffs, the only area that allows for a passable trail. We are quickly running out of water. The sun is setting fast and the old lighthouse on the island's eastern shore, our final destination, is nowhere in sight.

Wild, 200-pound boars squeal in the background while four-foot iguanas look at us with pity, or perhaps, hunger in their eyes. Hawks and frigates tempt me to join them in flight by jumping in weightless wonder off the steep cliffs we are walking. It is 1978, I am 16 years old and, yes,

I'm a little concerned. I will never kiss the girl of my dreams, I will not be found alive and these cactus spines in my butt hurt big time!

This was my introduction to Mona the first (and last) time that I decided to walk the whole circumference of the island. Eventually, we did make it but only after spending the night on inhospitable jagged bare rocks.

Nevertheless, I have returned to Mona year after year in search of a little wisdom and a lot of character building. Mona became my guide in matters regarding nature and what would later become my conservation consciousness.

When I learned to dive, Mona became the first diving destination I ever visited. Eighteen years later little has changed,

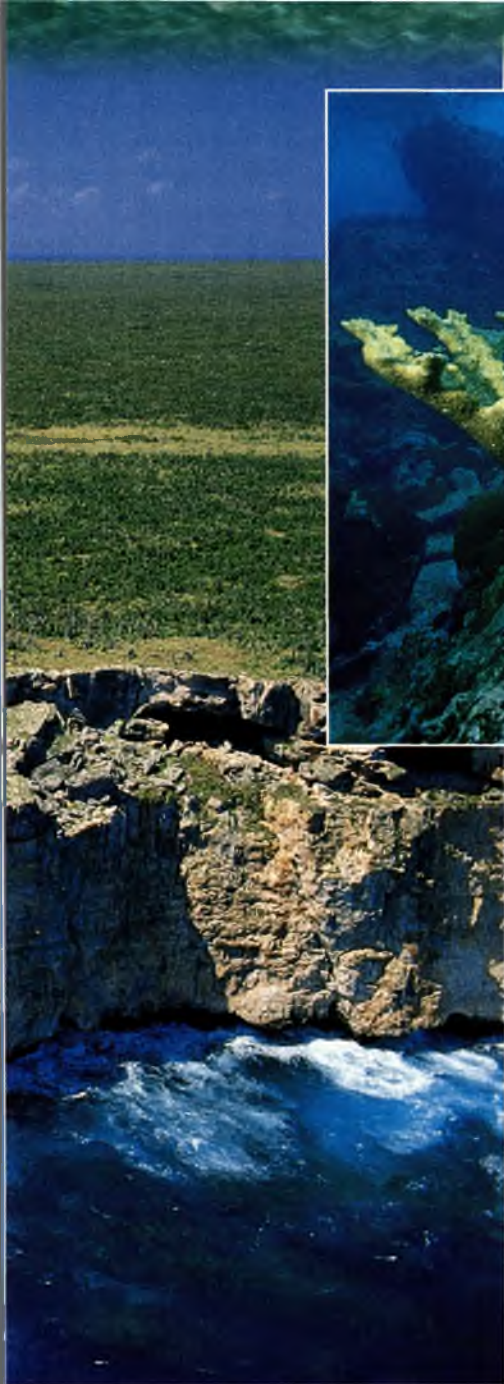
except for my aging body. At 500 thousand years young, Mona remains as beautiful as ever.

This was now my sixth trip to Mona Island in my native Puerto Rico.

### GALAPAGOS OF CARIBBEAN

Mona, as we know it today, was originally named Amona by its Arauca Indian inhabitants who lived and cultivated on the island until around 400 years ago when pirates drove them off to Puerto Rico. These peoples traveled between Hispaniola (Haiti/Dominican Republic) and Borinquen (Puerto Rico) and eventually established a community on Mona, a midway point between the two islands, a place to replenish food, water and regain energy lost in the crossing. They soon





The 200-foot-tall cliffs of Mona plummet underwater, making diving here deep. Fields of elkhorn coral grow all the way to shore.

found by the thousands throughout the island. Add to this 16 species of land snails (four are endemic to Mona), 52 species of spiders (including the infamous black widow), three species of scorpions, four millipedes plus 500 species of insects, and you have quite a party. There are also three species of snakes (all non poisonous) and the local Mona coqui, a small frog differing from all others in the world including its romantic cousin close by in Puerto Rico.

Enhancing this list is the Mona iguana. At four feet long it can run as fast as a dog. Like many other creatures on this five-square-mile mesa, it is found nowhere else, and although abundant throughout, it is scared easily by intruders including wild boar and wild domestic cats that dig out iguana eggs for food. These last two species, together with wild

goats, were all introduced in the last 300 years. In a way, they have become Mona's pests and are consequently targeted by hunters from Puerto Rico that come here during season to render their version of population control.

And then there are the birds — over 100 species in all. They include 14 marine, 25 coastal and 64 land species. They nest extensively on Mona and neighboring Monito which provide a varied habitat from beaches to high cliffs, from cactus to mangrove trees. Mona is an oasis in the middle off a rough ocean. The variation seems endless.

Mona's underwater world mirrors its surface. Huge boulders the size of trucks create tunnels, caves and canyons. Surface cliffs continue underwater, making diving here a little on the deep side. The wall, a few hundred feet from shore

came to settle in substantial numbers. Evidence of their existence is scattered throughout the island in the form of cave art and a central ball park.

The number and diversity of plants and animals for such a small island is impressive. On land there are more than 400 species of plants, four of which are found nowhere else on earth. There are also 50 species of trees growing in the low inland depressions and on coastal forests where some fertile soil exists.

Mangroves border parts of Mona's limited sea level coastline giving life to an otherwise rocky shore. There is all this growth despite the fact that this semi-arid island sees less than 32 inches of rain per year.

Hermit crabs, with their spectacular August migration towards the shore, are

#### **Mona and Monito Island**

**Entry Requirements:** A special permit is needed to visit Mona and Monito Islands from Puerto Rico. Permits can be obtained through the Puerto Rico Natural Resources Department. (787) 721-5495.

**Accommodations:** Camping only, no fresh water available. There is a \$2 fee for overnight camping.

**Transportation:** Boats are the only way to get there. Private boat charter companies offer transport to the islands. A minimum of a one night stay is recommended.





# Artificial Reefs — Healthy Solution or More Trash?

BY ROBERT MAZUREK

To repair a car, a mechanic must use the right tools: socket wrenches, jack stands, nut drivers and sometimes even a stethoscope to find that dull "thump" among the hundreds of parts. But what can be used to repair a critically depleted marine fishery? According to James Bohnsack, a Florida-based research biologist with the National Marine Fisheries Service, Florida residents have created artificial reef habitat by submerging, in near shore waters, such things as a concrete pink dinosaur, rows of rejected toilet bowls, a working Rolls Royce and even a "reef" made out of used hard disk drives.

Crazy? Artificial reefs, in one form or another, have been used by fishermen for more than 200 years. Residents of fishing villages in Japan first experimented with artificial reefs in the late 1700s, while documents show that the United States started utilizing them in the late 1830s.

It is a well documented fact that artificial reefs attract fish. Within hours of

deployment on a desolate, sandy, seemingly lifeless sea floor, fish can be found taking up residence; wait a few days — more fish.

In the state of Florida alone, 571 permitted artificial reefs have been deployed. Artificial reef advocates feel they are great tools in not only creating fishing opportunities, but also in increasing the overall number of fish in the ocean.

Are artificial reefs the answer to replenishing the world's depleted fish species, or are millions of pounds of junk being carelessly thrown into the ocean, further devastating already struggling ecosystems?

According to Bohnsack, artificial reefs cause more harm than good. "Before, you could spend all day out fishing, and maybe get exposed to one or two fish because they were scattered and dispersed. Now, an artificial reef will concentrate them, make them easier to catch. It could be a very bad thing."

Although it has been well demonstrated that artificial reefs quickly attract many species of fish, there were few studies that had shown whether artificial reefs were producing more fish, or just continually recruiting fish from surrounding natural reefs. This became more clearly understood with the 1985 release of a report in the *Bulletin of Marine Science* by Kathleen Matthews.

Matthews, then a student at the University of Washington, Seattle, studied four natural

reefs and one artificial reef in the waters of the Monterey Bay, California. During three seasons at her study site, she found fish compositions at the artificial reef to be "very similar" to those at nearby natural reefs. She also found that there were no species seen at the artificial reef which had not been already observed at the natural reefs. "Fish moved from nearby natural reefs, with relatively low fishing pressure, onto the artificial reef, with higher pressure," concluded Matthews.

Matthews' findings have been cited by those who caution against artificial reef use. Many researchers warn of the increased fishing pressure awaiting animals that move from many scattered, unmarked natural reefs, to often prominently displayed, buoy-marked, artificial sites.

Some researchers also point out that construction of additional habitat will not necessarily ensure an increase in fish numbers. "There is no evidence that suggests that if you put out an enormous volume [of artificial reef habitat]

you're going to get an enormous increase in [fish] productivity," said Jeff Polovina, a NMFS research biologist.

But, artificial reef advocates counter that in addition to creating fishing opportunities, artificial reefs also increase fish stocks. Dave Parker, a California Department of Fish and Game biologist, contends that adding reef habitat should enlarge fish populations, irrespective of the level of fishing pressure. "If you suddenly doubled an available habitat, and left harvesting pressure at the same rate, wouldn't you assume that perhaps you would have a larger overall stock of fish because your habitat is so much larger?"

Artificial reef supporters also contend that by increasing the amount of reef habitat, those fish whose survival is dependent upon finding a reef to colonize, are more likely to survive. "The mortality rate of the juvenile and planktonic phases of all kinds of organisms is so massive," explains Parker, "that artificial reefs are really providing an increased chance of survival."

In areas like the Gulf of Mexico, where natural reef is virtually non-existent, there is great public support for artificial reefs.

Fisheries biologists are moving the topic to the forefront of discussion. While it is certainly critical to protect naturally occurring reefs, artificial reefs seem to have an expanding role in the underwater ecosystem. ■



plummets into Mona Channel's dark depths. Close to shore in Sardinera and Pajaros Beach, small, well-protected reefs appear. Huge elkhorn coral grows all the way to shore.

On this dive, our anchor hooked deep into ivory sand. We were finally secure on the lee of Mona. The early morning light after the four-hour night crossing from Puerto Rico's west coast revealed cliffs that rose over 200 feet high from the ocean depths, assuring us a blanket of protection from the wind and waves battering the windward side. Brown boobies, frigates and red-billed tropic birds spied down on us from above with certain curiosity. Below our keel, deep crystal water waited. Without rivers, runoffs and with minimal human development, Mona's waters remain pure and clear.

This is a place of discovery. Blue water is so close that it is feasible to encounter just about any pelagic species of fish or large cetacean. There are 270 species of fish here from reef dwellers to blue-water pelagics including black-fin tuna, sailfish and sharks.

Throughout the Caribbean's subtle changing seasons, more exotic marine life arrive with precision. These include pilot and humpback whales, dolphins and whale sharks. Also visiting Mona's shores are various species of turtles. The most prominent are leather backs which return year after year to the beaches of their birth. Here, unlike Puerto Rico, the beaches have not been developed or modified, lessening the confusion of an already tired creature during a crucial part of its reproductive cycle.

Mona has been called the Galapagos of the Caribbean, a name that it must defend year after year in a time of continuous human encroachment and forceful ecological change.

Underwater, the marine selection is extensive, yet without the serious protection allocated by Puerto Rico's Department of Natural Resources to Mona and Monito, the waters surrounding them are threatened by overfishing and indiscriminate, uncontrolled spearfishing. A lack of enforcement of existing laws and educating visitors seem to be at the root of the problem.

Humans have always had their way with Mona. Exploitation of its limited resources have been slow but well documented. After 400 years of westerner's presence on the island, a small dent on its surface has been made. Deforestation has made way for agricultural efforts — a difficult task on Mona where soil is thin and in some places essentially non-existent. In Pajaros Beach, wild cotton still grows.



Some roads were cut to allow for the commercial removal of guano, or bat dung, which was used for many years as fertilizer. An operational lighthouse on the east coast and the Department of Natural Resources Ranger Station on the west is about all there is. They are connected together by "El Camino del infierno" or Hell's Road, a name well deserved. It is hot, sticky and will destroy the best of hiking boots, not to mention many adventurous spirits.

### MONITO

Monito is much smaller in size than Mona, and, at least for now, humans have left her alone to continue on her natural course. Sadly, at one time she was used as target practice by the U.S. Air Force. Her cavernous Swiss cheese-like cliffs are a cross between war scars and natural geological forms. There are endless, small grottoes and holes for the hundreds of birds that call her home.

I entered the waters surrounding Monito which lies about three miles northwest of Mona not really knowing what to expect. I soon discovered huge boulders and jagged-edged formations as on Mona. Canyons, caves, tunnels and arches, formations left after centuries of erosion and geological change, abounded.

Surgeonfish, wrasse, silversides and unusually large horse-eyed jacks schooled in continuous motion and were lost from sight from time to time in clouds of underwater foam that illuminated the otherwise dark depths. The current was mild, the visibility merely 150 feet. Yes, I was spoiled, but this was my sixth trip, and I had every reason to be.

Monito is also known to have an endemic gecko on the edge of extinction. Its 12 known individuals were named *sphaerodactylus micropithecus*, or "small monkey." For me, this tiny creature symbolizes the past, present and future struggles of Mona and Monito, a struggle to remain wild and undeveloped for generations to come. ■

*Special thanks to Carmen Vasquez at National Car Rentals, Stephen Bennett and the Puerto Rico Tourism Office and American Airlines for their continuous support and for not going on strike!*

*And to my brother-in-law Emanuel Perez for all his logistical support, Gracias to all of you.*

*Mauricio Handler, a frequent contributor to STM, has his hands full these days learning the behaviors of another rare endemic species — twinus babyus.*

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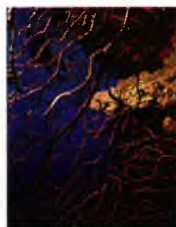
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## CORRECTION

In the October 1997 issue of STM, photo credit on page 30 of the giant barrel sponge should go to Bret Forbes.

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## Sigmund at the Spa

I look like Sigmund the Sea Monster after about the third day into a dive trip. My blonde mane is knotted, matted and dry and my skin is perpetually covered with a thin coat of salt scum and dead, sun-singed epidermis cells. I'm usually slightly hunched over, positioned for the least amount of pain for my aching back muscles.

It's an ugly sight.

Face it. Diving is hard on the bod, not to mention the skin, the hair, and the visual sensibilities of those around you. So, when I heard about a combination dive/spa vacation package in Bonaire, I had to investigate.

For me, the word spa conjured up images of California, of snooty white folks lounging around in bathrobes, drinking carrot juice and wrapping themselves in seaweed all day, like big sushi rolls.

But I'm a professional, and if the story called for self-indulgence, then I was willing to make that sacrifice. I soon found myself at the brand new European-style spa facility at the Harbor Village Beach Resort on Bonaire, an island famous for world-class diving and a resort that smacks of decadence and 24-hour TLC.

It's one example of the trend among Caribbean resorts catering to divers who want more than just great diving. Clients seeking other adventure sports, romantic honey-moonesque getaways, gambling, shopping, and, yes, spa treatments, are quick to find a dive resort specializing in more than just diving these days.

Maruba Resort and Jungle Spa on Belize, among others, is also renowned for its luxuriating spa facility. La Cabana Beach Resort on Aruba offers spa/fitness packages for dive travelers.

My days at Harbor Village consisted of a morning dive, followed by a visit to the spa. There, Judy the message therapist with magically strong hands, worked out the aches in my body, sending me, each day, into a blissful engagement with a hot tub. The menu of spa treatments includes everything from facial mud masks to whole body exfoliating salt scrubs, from yoga classes to meditation sessions, from waxing to aromatherapy. The steam room, sauna, unisex solarium, hot tub and Roman-style pool are open all day.

Exfoliated, hydrated, massaged and generally pampered, I headed home, for once feeling more like Princess Di than scraggly old Sigmund. ▀

— Katie Schickel



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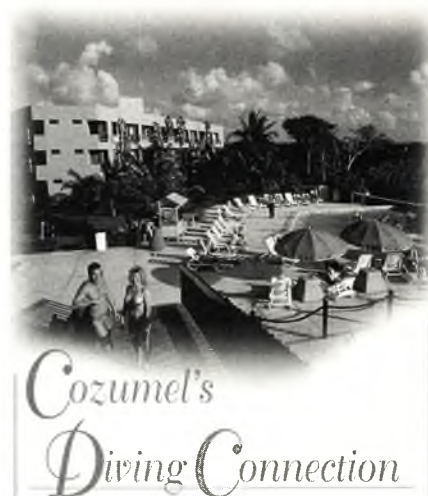
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The cartoon artist that first drew Warner Brothers' Tasmanian Devil must have been inspired by a 6-year-old. Granted, Taz may not be able to pull off that cute puppy-dog-eyes look, but he has something else in common with kids — both can turn into loud, cyclonic forces of destruction with little or no warning. So, when buying anything for children, be it roller blades, action figures or dive gear, quality counts.

Providing kids with gear that is designed to fit their smaller features enhances both comfort and safety. Almost all equipment manufacturers produce a line of children's gear. However, some companies specialize in it.

Quality is the driving idea behind Guppy Gear, a manufacturer that deals exclusively in a line of masks, snorkels, fins and swim gear for kids. Guppy Goggles, for instance, are designed for ages 5 to 10, have a tempered glass lens, a high-impact plastic frame and incorporate a feathered double seal and easy to adjust buckle. The perfect compliment to this adult-quality, kid-sized mask is the Guppy Gills silicone snorkel. It features a small bore for small lungs, rotating mouthpiece and integrated snorkel keeper. Completing the set are Guppy Gliders, down-sized fins with adjustable straps (to accommodate ever-growing youngsters) and an extended heel to protect against rock or coral abrasions. Guppy Gear also offers full-boot fins, which may be more comfortable on bare feet. The fins come in a nylon mesh carrying bag and are available in yellow, blue, pink or black. Masks and snorkels are also available in these colors with the addition of white.

When young snorkelers become young divers the need for proper fit applies to more than just snorkeling gear. Forte has introduced a youth-sized BC, the Rebel. Instead of simply producing a smaller sized adult jacket, Forte built the Rebel around a new backpack designed to fit the smaller frames of young divers. The BC also employs a wide range of cummerbund and strap adjustments allowing it to grow and therefore last several seasons. The Rebel is black with color accents of either yellow, royal or purple and comes in two sizes to fit divers between four-feet eleven-inches and five-feet five-inches. ■

For more information call: Guppy Gear (847) 827-3210 and Forte (714) 848-8292.

— Daryl Carson



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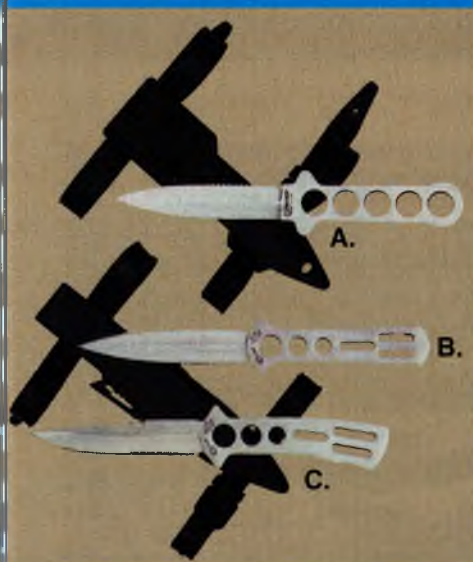
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Blade Length: 4"  
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Blade Thickness: 3/16" Imported  
Retail - \$19.99

### B. UC842 - Stingray II

Overall Length: 8 - 7/8" Blade Length: 4 1/4" Double edged blade  
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### C. UC899 - Stingray III

Overall Length: 8 - 7/8" Blade Length: 4 3/16" Single edged blade  
Blade Thickness: 3/16" Imported Retail - \$24.39



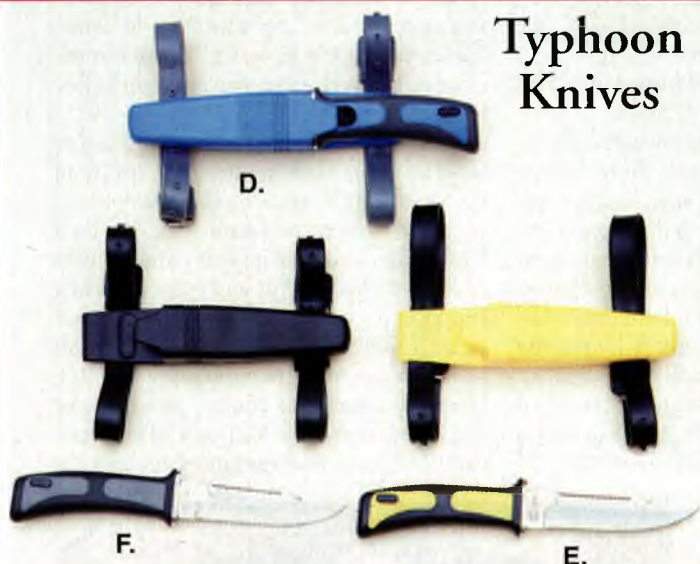
## Shark Hunter II

### G. UC854 - B Shark Hunter II - Blue

### H. UC854 Shark Hunter II - Black

### I. UC854 - Y Shark Hunter II - Yellow

Overall Length: 6 - 7/8" Blade Length: 3 - 1/4"  
Blade Thickness: 1/8" Blade Material: 420 J2 Stainless Steel  
Handle Material: Impact - resisant polypropylene - Imported  
Retail \$17.99



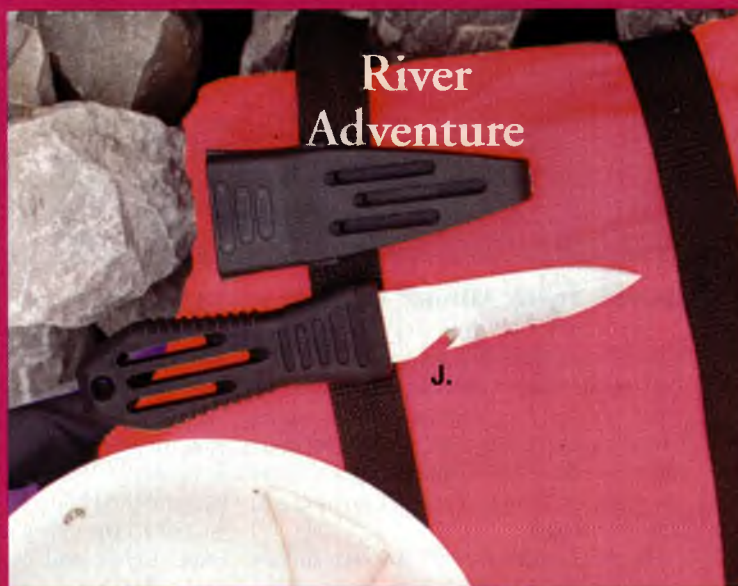
## Typhoon Knives

### D. UC753 - Typhoon Knife - Blue

### E. UC672 - Typhoon Knife - Yellow

### F. UC854 - Typhoon Knife - Gray

Overall Length: 9 - 1/8" Blade Length: 4 - 5/8"  
Blade Thickness: 5/32"  
Blade Material: 420 J2 Stainless Steel  
Handle Material:  
Impact - resisant ABS with a soft leather outer grip.  
Special Features: Full Tang Construction. Includes leather arm/leg straps. Imported Retail - \$34.79



## River Adventure

### J. UC929 - River Adventure Diving Knife

Overall Length: 7 - 15/16"  
Blade Length: 3 - 9/16"  
Blade Thickness: 5/32"  
Blade Material: 420 J2 Stainless Steel  
Handle Material: Impact - resisant ABS  
Sheath: ABS with a pocket clip.  
Imported  
Retail: \$31.29



# DIVE AMERICA

Hot Spots From the Show-Me and Bluegrass States



Once a working lead mine, Bonne Terre hangs on to remnants left over from its heyday.

## Bonne Terre Mines, MO

We descend into the clear, fresh water a short way from the underground dock. Passing through an opening in the wall, we enter one of the stadium-sized caverns carved long ago by the miners in their quest to extract their daily quota of lead ore from the Bonne Terre, or good earth, Mine, Missouri.

In the Ladder Room, massive pillars carved from the bedrock to support the mine's ceiling drop out of sight to the floor below. Steel structures, ladders and other apparatuses used by miners cling precariously to the walls, reminding me I am immersed in the history of an immense human achievement. The filtered light from a string of sodium lamps suspended above the water's surface create a mystical ambient light with dramatic shadows and dancing light beams.

The lead mine was worked for almost



Divers enter Bonne Terre Mine through the old mule house then descend deep below the earth's surface.

100 years by the St. Joe Lead Company until 1960 when the demand for lead dwindled and the mine finally closed in 1962. When the mine was abandoned, the pumps that kept it dry were turned off. Over the years, fresh groundwater seeped in, not only filling this man-made wonder, but covering the tools and equipment

left behind by the discouraged miners. After nearly a century of continuous operation, they were suddenly without the livelihood they had come to depend on.

Doug and Cathy Goergens first dived the mine in 1978. Certain they had found something special, they managed to acquire the rights to it in 1981. Starting with cave lights and reel lines, they have developed it into one of the most unique dive locations in the world.

The underground water temperature is 58 degrees. Visibility exceeds 100 feet. The water is so still, one can actually observe rust plumes suspended above the iron tools

left behind decades ago as they slowly oxidize. Dives are never canceled due to poor weather or water conditions.

The mine is entered through a small surface building that served as the old mule entrance. The quarter-mile trek down to the subterranean dive dock is an awesome precursor of the adventure to come. The constant drip of water throughout the mine reminds you that you are deep below the earth's surface.

Inside, divers come upon the many hand tools as well as ore carts, railroad tracks, dynamite boxes, even a timekeepers' shack and steam locomotive. Brilliant white calcium deposits and natural veins of lead, quartz, cobalt and other minerals run through the walls. The mine is made up of 1,500 massive rooms, covering 80 square miles and linked together on five levels by a series of chutes, passageways and ore dumps. The Billion Gallon Lake has 17 miles of underground shoreline.



This flooded rock quarry in Cerulean, Kentucky is ideal for training.



Diving this water, where an army of miners once worked, and seeing long forgotten equipment and structures stimulates vivid images of a time long past.

— by John Petrak

## Cerulean, KY

"Okay, now wave to the folks on the front porch," I say to my students. We drive by here with beginning scuba students every weekend in the summer and folks in the sleepy little town of Cerulean, Kentucky know us by sight. They have become accustomed to the weekend parade of trucks, vans, cars and scuba trailers winding through the early morning mist on the way to Dive Cerulean.

Tourists are nothing new here, either. For years, from the late 1800s through the 1920s, people were drawn here for the waters, a spring with a high magnesium content thought to be healthful for bathing. The two-story hotel, the ballroom with full orchestra, the bowling lanes and the horse-drawn carriages are long gone now. But we still come for the water.

Dive Cerulean is a limestone rock quarry that flooded from a spring in the late 1950s. Now it's a dedicated scuba facility used by recreational divers and as a training site. You'll find instructors here nine months out of the year with open water, rescue, drysuit and even ice-diving courses in progress.

The resort operators have a shop on site offering air fills and a selection of "whoops, I forgot my . . ." and "oh no, the strap broke" gear. They also have first-aid equipment, including oxygen, on site.

Underwater, students and instructors use training platforms at various depths across the 16-acre quarry, all marked with surface buoys. There are sunken cars, a truck and boats, as well as blue gill, bass and the elusive catfish that glide in and out of the boulders along the quarry walls. The maximum depth is 35 feet, and the water temperature rises to around 80 degrees during late July, August and early September. The best visibility of the year is during February and March.

Hundreds of divers come to Dive Cerulean to keep in practice and to check out their dive gear, but the biggest event of the year is the annual Treasure Dive, held in early August. The hunt has drawn over a hundred divers each of the last four years. In 1996, 160 divers competed for 127 prizes.

For more information on Dive Cerulean call Dave and Cindy Westerfield at (502) 235-2713. ■

For more information on local dive sites see the Dive Store Directory, page 82.

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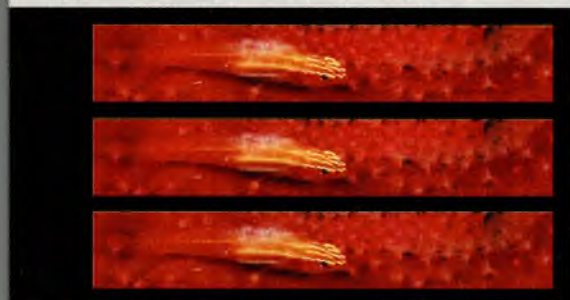
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40 Portfolio: Galapagos 44 Big Sharks, Little Bugs 46 Dragons of the Deep 48 DV Camcorder Review

Since taking up underwater photography in 1972, Chris Newbert has won over 30 awards in international photographic competitions. His photos have appeared in over 250 books and magazines worldwide. His book, *Within a Rainbow Sea*, has received accolades from *Publishers Weekly*, *Playboy Magazine*, the *Los Angeles Times* and many others. This coffee table book was selected by the White House as an official Presidential Gift of State. In this special portfolio, Chris and wife Birgitte Wilms bring us the Galapagos Islands.





Scalloped hammerheads

# Bodies in Motion

## PORTRAIT OF THE GALAPAGOS

TEXT AND PHOTOGRAPHY BY CHRIS NEWBERT

**T**he steeply sloping, rocky reef began to flatten at about 150 feet. I tucked in between two large boulders to hide from sight. A swift current carried my bubbles far downstream as they fought for the surface. In less than a minute it appeared — a towering school of hammerhead sharks. Over and around me they passed, so close at times I could have touched them. In the crystal clear water I could see far off the reef, but I could not see the distant edge of the school. It stretched beyond sight. At the upper levels of this living wall, I could see Galapagos sharks and silkies schooling with the hammers. And within my field of vision, without turning my head, I could count more than 30 turtles casually mingling with the sharks. An eagle ray the size of a manta passed behind and above me. Slowly and as quietly as possible, I pushed out from the rocks and merged with the school, letting the current carry me through the blue water, through the sharks, through hundreds of yards of open ocean, yet surrounded the entire time by this

massive migration of carnivores. Single frames of film later displayed over 100 sharks per shot, per this tiny captured fraction of a second. The best population estimates of this hammerhead school, from those of us who were there, exceed a mind-numbing 10,000.

The Galapagos Islands stand alone by my measure as the world's greatest diving destination if drama, big animals, huge shark schools, diversity and sheer biomass are the yardstick of choice. Experiences such as above are not uncommon, yet they don't happen every dive, nor every day. Sometimes entire trips go by without such singular experiences. That is the paradox of the Galapagos. For the Galapagos sets its own unique standard of excellence, raising the threshold of excitement and expectation to near impossible levels. Average dives in the Galapagos will often produce more big action than most world-class spots will in a month, or a year — or more. We have had innumerable safety stops in Galapagos where we have witnessed everything —



dolphin, silkies, hammerheads, wahoo, turtles, schools of rays, sea lions and boobies, all at once. Boobies? Yeah, boobies. For the ultimate appeal of Galapagos is not merely its matchless big action diving, but the special integration of its underwater and terrestrial wildlife, from marine iguanas to sea lions, to its diving birds such as boobies and penguins. So dazzling can be the blue chip underwater subject matter that visiting divers often entirely overlook a wealth of macro marine. This is what you do in Galapagos when the shark encounters have dwindled to mere dozens and you never want to see another turtle. Frogfish, seahorses, exotic nudibranchs, strange decorator crabs, magnificent scallops and red-lipped batfishes are but a few of the close-up photographic delights. Galapagos is simply the most richly textured of any dive area I know.

This natural wealth has made the Galapagos a target and they are under tremendous political pressure on behalf of those who would exploit these waters for short-term economic gain — and certain long-term destruction. The media is full of inflammatory and fundamentally false stories about unbridled environmental disasters occurring there now. The present reality of Galapagos is that it remains as good or better than I have seen it in all my experience there, dating back 15 years. Yet it is indeed under threat of potential exploitation. Illegal fishing activities are on the increase and if the political forces favoring this exploitation win, the world



Eagle rays



Steel pompano jacks



will have lost something so unique, so extraordinary, that history will condemn all those who knowingly let it happen.

Those disseminating the current horror stories are not, in my estimation, ill-willed people. They are just extremely concerned, and have chosen this tactic to try and ignite international action. If they are not accurate reporters of current events, perhaps they are merely prophets of a sad and shameful future. Some suggest boycotting Galapagos, to make Ecuador suffer economically for their lack of aggressive action against illegal fishing and irresponsible stewardship of this unique wildlife gem. But this is akin to declaring victory for the fishing interests. Reducing the economic power and impact of the tourist industry by boycott, and the economic contribution tourists make to the local economies will only weaken the argument that tourist dollars are the only reliable, long-term source of income. And, by extension, preserving the natural treasures of the Galapagos is the only way to assure continued support by tourists.

Indeed, the poverty-plagued country of Ecuador should be congratulated for the efforts they continue to make to preserve the wildlife heritage of the Galapagos. Their record so far, though not perfect, is considerably better than most countries, including our own. They need encouragement, they need support, they need the economic clout to win the battle. ▀

Magnificent scallop



Sea lions in a cave



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IN THE WILD



A shark pup swims in the mangroves, a bountiful habitat in the Bahamas.

# Big Sharks, Little Bugs

## THE SHOW MUST GO ON

TEXT AND PHOTOGRAPHY BY MARTY SNYDERMAN



**W**e were out of bed by 3 a.m. and on the dock just a few minutes later. By sunrise we were way back in the mangroves. With a step ladder in one hand and my 16mm movie camera in the other, I was trying not to stumble and drown \$10,000 worth of gear. At the same time I was hoping to fend off swarms of mosquitoes and no see 'ems, the common name for miserable little insects that bite like hungry tiger sharks but are too small to see. Despite inundating myself with repellent, I was getting eaten alive. Give me sharks any day.

I told myself, "two weeks from now when the itching stops, we'll be glad we got the film. You can do this. It builds character." Of course, in the back of my mind I was also thinking, "I'm 47 years old, and if I don't have character by now, I'm not likely to get it from insect bites."

What I'd give to have with me all those people who think my job as a wildlife film maker is one big vacation. I'd love to see how many would scream for mercy. Of course, I would've liked to have anyone with me, just so the damn bugs would chew on someone else for a while.

Don't get me wrong. I love my career. I'm living my dream by producing films about the marine environment, but at that moment Rocky Strong and I had been on location in Australia and the Bahamas for four straight months. We weren't wearing each other's underwear yet, but we had told each other every joke, every story, every thing that had ever happened in our lives at least six times. In recent weeks we had been fighting weather and water conditions, and now, voracious insects. There is always the danger of getting bitten when working with sharks, but this was ridiculous.

Two months earlier Rocky and I had stepped off an airplane inbound from Australia and boarded one outbound for Walker's Cay in the Bahamas. We expected to be there

for three to four weeks to film several sequences for a film about sharks and their kin that we are co-producing for the PBS series *Nature*. We considered finding and filming sharks in the Bahamas a given. We were wrong.

Now, we couldn't have been working in a better setting, or with better people than Gary Adikson and the gang at Walker's Cay. But they weren't responsible for the unseasonable storms and bad water conditions. Throw in a few inebriated tourists and a little bad luck, and well, there we were, struggling to hold it all together. It should be noted that a lot of that time we were working off the beaten path, in places where Gary does not take his guests. We were breaking new ground by filming sharks in the mangroves.

For the next six hours I stood on a step ladder hoping to acquire more footage for our film. I was hot, thirsty, chewed up and tired. That's one of the crazy things about wildlife film making — you know going in that some days the elements and the wildlife are going to beat you up. If there is a given, that is it. But the chess game with the weather, water, animals and logistics is all so compelling. Winning the game is the second greatest feeling in the world. Lose it and you feel lower than the Cayman Trench.

Despite the negatives that day I was excited to have a chance to film Caribbean reef shark pups, lemon sharks, and nurse sharks from my elevated vantage point. I had some underwater footage already in the can, and the topside material would help us flesh out the mangrove sequence.

From previous snorkeling trips, I knew the mangroves could be full of life, but until this expedition, I didn't realize how much really goes on there. On this day I had sharks swimming all around me, but I hadn't gotten a great sequence set up yet. Patiently, we hung in there.

Just after 1 p.m. several nurse sharks gathered under the ladder. I knew nurse sharks had been seen mating in other



areas in recent days, and I was hoping that these sharks were pursuing mates. It was soon obvious — this was courtship. I could see a male chasing a female. I framed my shot and rolled film. One second later my battery died. No battery, no film. By the time I could change batteries, the sharks were long gone. Unbelievable!

I started to scream, but all that came out was a muffled cry. I swore I'd never tell another soul, and I wouldn't have if five hours later I hadn't gotten the shot.

During our stay at Walker's Cay, Rocky and I had a chance to film more sharks than we ever thought possible. The word in the diving world is, if you want to see sharks, go to the South Pacific. On the other hand, if you'll settle for pretty reef creatures, a rum punch and a gorgeous sunset, the Bahamas and Caribbean will do just fine.

I have heard this line of thinking for years, probably even helped spread the word at one time or another during my career. But I had failed to realize how much the Bahamas has to offer. In a nine-week stay at Walker's Cay, we filmed seven species of sharks, a list that included a great hammerhead, a bull shark, and tiger sharks. While working at night we saw more five- to six-foot-long blacktips in two to five feet of water than we could count. And we saw at least eight tiger sharks that were over 200 pounds in less than 20 feet of water.

Though none of the tigers showed the slightest sign of aggression toward us, there is a moment of humility that comes when a 10-foot-long tiger shark turns and heads right at you.

Part of our film focuses upon the increasing value of sharks in terms of ecotourism. Shark dives are a huge turn-on for guests at Walker's. But the thing that really struck me is how so many people who seem to be drawn to the dive for all the macho reasons depart with an increased appreciation for sharks. I hope our film shares their feelings.

I learned two valuable lessons during this expedition. First, when it comes to sharks, don't discount the Bahamas; second, no matter how tempting it might be, for me there will be no more skinny dipping at night in the Bahamas.

Note: The film should be completed this winter and is tentatively scheduled to air in the spring of 1998. We will keep you posted. ■

*Marty Snyderman is an STM contributing editor and a seasoned skinny dipper.*



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# Diving





A male seadragon carries eggs on his tail where they are incubated for three to four weeks until hatchlings emerge.



Eyes of the growing embryos appear as little black dots.

# Dragons of the Deep

## A FATHER GIVES BIRTH

TEXT AND PHOTOGRAPHY BY MICHELE HOFFMAN



**D**ragons share a running association with mystical power, shape-shifting ability, fire-breathing, even completely disappearing from view.

In Western minds a dragon represents danger and foreboding, while Eastern philosophy recognizes them as good luck and healing. The dragon that I was seeking was far less imposing. Big cousin to the lovable seahorses and odd-looking pipefishes, weedy seadragons help complete the tree for the family collectively known as *syngnathids*.

Seadragons hardly look like fish at all. As with a pipefish or seahorse, it uses tiny, rayed fins to propel itself, breathes via gills, possesses a swimbladder for buoyancy control, and has a bony armor-like skeleton.

When asked to photograph weedy seadragons for an aquarium exhibit in the United States, I knew just where to go. Six months prior to the assignment I was introduced to Botany Bay, Australia. Weedy, or common, seadragons have been known to inhabit Botany Bay since the 1830s and although they are found elsewhere in temperate Australian seas, Botany Bay is the ultimate seadragon hangout.

I began the search on December 1, summer in the southern hemisphere. Out across the rocks we went, over an enormous expanse of sunlit sargassum, and down a sharp incline. But lack of luck that day yielded zero seadragons.

Poor weather kept me out of the water until December 12, an early Thursday morning, not another diver in sight. Within minutes of starting the dive, a shape emerged from

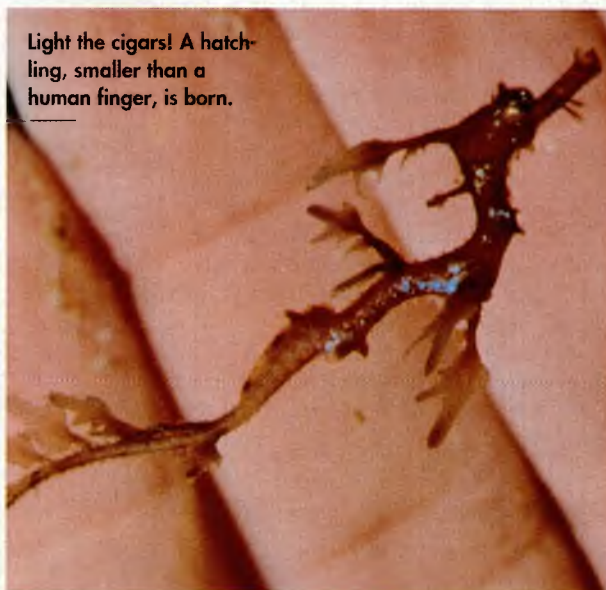
the backdrop like magic. My heart spun almost as fast as my shutter clicked as I began snapping away. Our two weedy hosts seemed undaunted by the intrusion and went about business as usual, darting in and out of the weeds for which they are named.

Only a few feet away a male, laden with a tail-load of cargo, was engaged in a tidal waltz. We knew he was male because of the cargo he carried — eggs!

Seadragons have adopted the pipefish way of rearing offspring. Although egg transfer between male and female seadragons has never been witnessed, it has been deduced that the female uses her ovipositor to secrete the eggs she carries within her body onto a soft patch on the underside

of the male's tail. Once the eggs (numbering in the range of 120 to 150) are placed, they are incubated for about three to four weeks until the hatchlings emerge.

Seadragons tend to confine themselves to a very small territory, particularly when they are carrying eggs. Our expectant father found himself the perfect nursery between



Light the cigars! A hatchling, smaller than a human finger, is born.



two rock walls with a thick carpeting of weeds running through the middle. This would make it easy for us to keep track of a single animal and monitor the entire gestation.

December 17. Back beneath the waves we had no problem locating our Daddy-to-be, whom I had come to call Darwin. There he was waiting for us, proudly displaying his brood. In the photos of the eggs, the eyes of the growing embryos were visible as little black dots.

The next dive day, December 20, yielded an equally pleasing outcome, and with a bigger zoom in on the eggs their little spines could be seen in the resulting photos. Three weeks had gone by since the first day we found Darwin carrying them; it could not be long now before the new seadragons would be swimming among us in their own tidal waltz.

It wasn't until December 28 that I was able to get back to diving, and by then the time had come and gone. Finding Darwin was as easy as it had been on previous dives, but the only evidence left of his brood were the indentations left by the eggs that gave his tail a honeycomb-like appearance. Although we searched the area for signs of the hatchlings, their whereabouts was a mystery. Perhaps we were not looking close enough, or the tide dispersed them to the sea. Predators may have had better luck finding them, but for us they were nowhere to be found.

The first weekend in January, I went to Jervis Bay, just three hours south of Sydney. On this trip I was hoping to find a red indian fish to photograph, another long-time goal of mine. Sunday, January 5, I got my red fish and — hatchling seadragons. It was a one in a million chance, but coasting along the sandline at 50 feet, there they were — barely anything more than specs of flotsam with eyes and fins.

Using a 1:1 extension tube to fill the frame, I fired away with my camera, astounded at their infinitesimal size. There were seven new arrivals mingled in with the plants. And then, just like that, there were six as a maori wrasse swooped by for a snack. In utter disbelief, I put my hand up behind one to see how small they truly were.

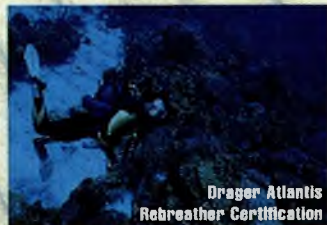
Maybe, just maybe, I thought to myself, as I headed back to the boat, they were Darwin's babies. ■

*Michele Hoffman earned a master's degree in marine science in Sydney, Australia while working on this project. She teaches oceanography at Columbia College and works at the John G. Shedd Aquarium in Chicago.*

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# Underwater Video Goes Digital

## DV CAMCORDER REVIEW

TEXT BY DAN WALSH



Just when you thought it was safe to buy that Hi8 camcorder to shoot your underwater videos, wouldn't you know that the big camcorder makers like Sony, Panasonic, JVC and Sharp would up the ante technically and introduce today's current crop of digital camcorders.

Sony DCR-VX-1000



Why go digital? This new technology brings with it better picture quality due to production and performance advances made in the actual CCD imaging chips, an internal device used to collect the images into the camcorder. It also has an entirely new format of videotape for recording your images.

Although the new digital video (DV) models closely resemble current 8mm and Hi8 models in appearance and features, the real difference is the way the video images are recorded and stored on the digital videocassette.

Sony DCR-VX-700



Up to the introduction of digital camcorders, all previous models recorded the video signal in the analog mode. If you have any experience at all trying to copy or edit a videotape, you've noticed that the copy doesn't look quite as good as the original tape. That is because some of the video information contained on the original tape is lost during the copying process to the duplicated or edited tape.

Here's why your footage shot on a digital camcorder will look better than footage shot on a typical analog camcorder. In the digital world, the signal is processed using sequences of 0s and 1s that we've heard about since the invention of computers. How

this translates to video use is that the copied or edited tape will be of the same quality as the original as long as you stay in the digital domain — going digital to digital in the copy or edit process.

Several electronics companies have introduced digital input boards for your home or office computer that allow you



Sharp VL-DC1U

to input directly from your digital camcorder to your computer hard drive using the popular new Firewire technology. The Radius Company has introduced its PhotoDV and MotoDV digital products, selling for less than \$500, expressly for this purpose, with others bringing out like products as well. Coupled with additional editing

hardware and software that is readily available, you now have the ability to make professional broadcast quality video productions from your own footage right at the keyboard of your computer.



Sharp VL-D5000U

As with any emerging technology, certain products rise to the top when entering the digital realm. For underwater video production, the clear choice of digital camcorders among professionals is the Sony 3CCD DCR-VX-1000 model. This is the unit that to date has been embraced as the

leader in numbers of units housed for underwater use by professional videomakers, network documentary shooters and the general dive videomaking public as well. The very high quality picture obtained from this unit, combined with its popular price (now about \$3,300) compares to the Betacam SP units costing \$25,000 or more that broadcasters have used worldwide over the past 12 years.



JVC GR-DVM1

Currently, other models of digital camcorders from Sony are the single CCD models DCR-VX-700 (street price about \$2,500) and the very small DCR-PC7 (street price about \$2,000), which was recently used by ESPN 2 during the X Games to televise the Sky Surfing aerial competition. Even this paperback book-size unit gave

quality pictures good enough to be broadcast! Sony has announced that new consumer model digital camcorders will be introduced in the near future to complement the current models listed above.

Sharp Electronics offers the VL-DC1U Mini DV model, and the VL-D5000U digital model of their popular Viewcam series with its integral five-inch color screen. Street prices vary on these models, so check with your dealer for the current price.

Panasonic has jumped into the market in a big way in the consumer/prosumer and broadcast arenas. Their small AG-ESZ1U is a 3 CCD model that is small and barrel-shaped, and features a large viewfinder for easy viewing. Picture quality is excellent, and its street price is around \$3,000. Panasonic's larger camcorders in the \$6,000-\$12,000 price range offer more professional fea-



Panasonic AG-EZ1U



Sony DCR-PC7



tures, but housing one of these models would be a major investment. Panasonic also offers digital playback units which are popular with professional videographers.

JVC boasts a mini DV model GR-DVM1, which is similar in appearance, features and price to Sony's paperback book-sized model PC-7.

**Housings** — Housing a digital camcorder is as easy as housing an 8mm camcorder. Many of the companies that manufacture housings for 8mm camcorders also tailor them to fit the digital models. You should be sure to check with video housing manufacturers first before buying a digital camcorder, to be sure that an off-the-shelf housing exists for the model you are considering. As new models of digital camcorders are continuously introduced into the market, it becomes necessary to find out about the most current housing options for that model.

**Tape Formats** — If you've been around the video scene long enough to remember the "Beta versus VHS" format wars of the early 80s, with VHS being the popular winner worldwide, then you may recognize a similar situation with digital video tape formats that has developed. Without getting extremely technical about signal bandwidth and the like, let me simplify things to tell you that a digital tape recorded on Sony equipment (DVCAM format standard and mini-size videocassettes) will play back on Sony or any other manufacturers equipment, but tapes recorded on the DVPRO format (including Panasonic, Sharp, JVC, et al) will play back on any equipment except Sony machines. Perhaps Sony will make fully compatible units in the future, but for now, be aware of this situation. The blank MiniDV videotapes themselves however, will fit in most all small digital camcorders and record correctly — you can use a Sony MiniDV tape in a Panasonic, Sharp, or JVC unit and vice versa with excellent results. All of the models I've mentioned use MiniDV videocassettes, good for an hour of recording time.

If you are thinking of buying your first camcorder unit for underwater video use, make it digital. If you're upgrading from Hi8 or SVHS, you're in for a treat. In either case, check out what's available, and go for it! ■

*Dan Walsh produces outdoor and underwater television programs for ESPN and other networks.*

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Welcome to the school of Hard Knocks where seasoned divers relive the most harrowing, horrifying or embarrassing moments in their long dive careers. You may gasp, chortle or snarf milk up your nose — but you'll definitely be glad you weren't there with them.

— cover photo top by © James Watt  
bottom by © Marty Snyderman

TOM MORRISEY • ADJ EDITOR





# Jim Versus the Volcano

## BURIED ALIVE BY LAVA ROCK

It was December, 1986 and I was doing some underwater filming on the lava flows at Kapaahu, off Volcanoes National Park in Hawaii. My dive buddies and I were doing lots of filming, both still pictures and film. This dive entailed documenting the formation of pillow lava underwater with one of the early IMAX cameras. I put in about 10 days diving on the flow with Dick Bradley, Dr. Lee Tepley and the late Carl Spencer. Lee was the first person to ever attempt diving on an active volcanic flow. It was in the 1970s while he was filming the eruption of Mauna Ulu.

He had guts.

The result of his work, a 1971 documentary called *Fire Under the Sea*, is still a classic.

On December 5, 1986, we were back on the flow, diving and filming. Lee wanted to get some real action stuff so we picked a spot where the lava was flowing the strongest. The flow had been going into this same area for a number of days, making the shoreline underwater very

five minutes when two underwater explosions erupted close by. Within seconds the entire face of the wall started to collapse. Tons of lava rock plummeted down the slope.

The next three minutes were filled with pure terror as we felt the raw power of earth and ocean.

Engrossed in his filming, Lee didn't seem to notice the avalanche cascading above him. I began swimming toward him to get his attention when the wall started tumbling on top of him. He was soon buried under five feet of rock as the avalanche continued downward, dragging everything in its path. Within seconds Lee was gone completely out of sight. I was stunned. This can't be happening, I thought.

At that moment I felt the suction of the sliding rock drag me down into the maelstrom. I swam as hard as I could to keep away from it but was sucked downward. I ended up in about 160 feet of water before I made any headway at all. Lee was nowhere to be seen and neither were the safety divers — they had split at the first tremor (can't really blame them).

I relaxed for a second and got my wits together. We had only been down for a few minutes and I still had air so I went looking for Lee. I dropped down to where I could make out the bottom at 250 feet. Actually it was the pseudo-bottom — a pile of rubble and debris from the slide. I tried to find Lee's bubbles, but

escaping gases formed bubbles everywhere. I looked around for a while then gazed towards the surface. The safety divers had returned and were at the 100-foot level motioning for me to come back up. I tried to communicate that I needed to search for Lee but they made a motion towards the boat. I was just about out of air so I went up.

I knew that I needed some decompression so I was hopeful that the boat would be nearby with spare tanks. I did not want to think about the next dive to try and recover Lee's body.

I was certain he was dead.

The boat was only about 50 feet away when I surfaced — and there was Lee. They had pulled him out of the water over a 300-foot bottom. Lee was shaken up and bleeding heavily from a gash on his knee. His hands



Filming the fire underwater. This was the scene moments before an explosion triggered a lava avalanche.

sheer. When the lava delta gets this vertical it is also extremely unstable and prone to falling over on itself. We knew this, but the sea was the calmest we had seen for weeks. Being young and dumb I had no problems with the decision to make the dive.

That morning the boat dropped us off about 100 feet from the flow edge. After working up to the flow from deeper water we settled in at the base of an active vent that was pumping out the largest amount of lava we both had ever seen. We had two safety divers along from the park service. Their job (in theory) was to bring us up if we were knocked out by an underwater explosion or implosion. I had been through an explosion once before, and although it didn't knock me out, it was disorienting.

We had been working the flow at 40 feet for about

BY JAMES D. WATT



looked like they went into a meat grinder. I didn't ask him the details of his experience right away. A greater task was at hand. I was trying to convince him that we had to get back in the water to do some decompression. I wasn't about to get out of this mess alive only to get bent instead. We had no idea how long we had been down (this was before dive computers) or how deep — just that we had made it out alive. We decompressed for a full tank.

Back on the boat Lee related his side of the story. He said that he was totally unaware of the danger till the lava rock slide had engulfed him. He remembers desperately trying to claw his way out of the rock. But the movement of the rock slide just kept carrying him down the slope until it eventually spit him out like a wad of bubble gum. He had managed to push aside the few rocks restraining him and started to swim up. He said the water was completely black and he needed a few moments to figure out which way was up. He followed his bubbles. It took him about two minutes to get into clear water and five to swim the rest of the way up. We figured his maximum depth between 260 and 300 feet.

Unbelievable as it sounds he still had the movie camera with him and it was running. It was attached to a lanyard on his wrist. The movie footage is dramatic. You can see the wall slide and the camera stop as he gets buried — the last frames of molten lava hitting his dome port.

That evening I attended a social party with my wife and son. I tried to relax, but my mind played over and over the day's events. Every so often my body would start to shake. I was oblivious to the social surrounding and kept looking at my family, wondering what they would do without me. I vowed to myself that I would never get into a situation like that again. I still film dangerous marine life and have to admit that I have been in many unforgiving situations. The difference now is lots of planning and forethought. So far I have kept the promise to myself.

Many have asked if we ever returned to the volcano to dive again. The answer is yes. On a beautiful day with a very low level of activity I made a conservative dive just to get rid of some of my own devils. It was a relief. Lee never returned to the volcano. ■

*James Watt is a wildlife photographer and publisher based in Hawaii. He has published over 300 books and magazines worldwide.*



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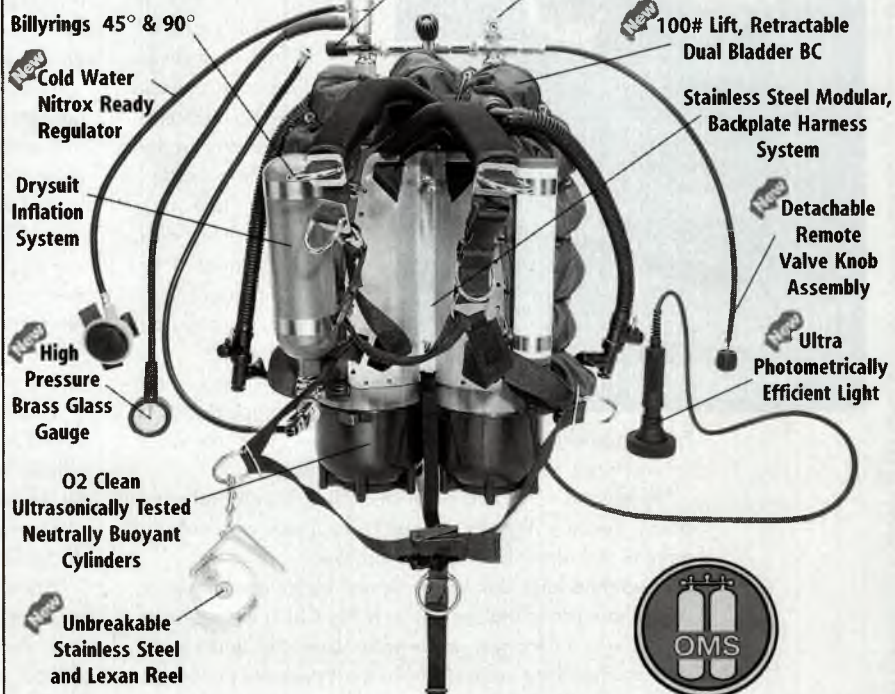
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# The Ghost of Parker Turner

## AN EERIE CAVE ENCOUNTER

**"1986,"** Mike Madden said behind me. He referred to the black-and-white photo, slightly askew over his desk, that had my gaze. In it, three men stood by a van, worn and trail-weathered following days of bush tromping to inland caves.

"That's from one of Rob Palmer's cave diving expeditions in the Bahamas," he explained. "Not a great photo, but it means a lot to me." He adjusted the desk lamp so we could see it better in the dimness.

I knew the faces at a glance — Mike and Roger Werner; I'd been cave diving with both over the last few days as part of Project Nohoch '96. To their left, renowned cave diver Parker Turner leaned against the van. But it was the crack — an irregular curve slicing from the top and disappearing under the bottom from the edge — that caught my attention. It knifed cruelly across Parker, leaving Mike and Werner untouched.

"I put that photo away before Parker's accident," Mike continued, "and it wasn't cracked. After he died, I dug it

out and that's how I found it. A little eerie."

More than a little. Parker died in a freak cave diving accident — a passage collapsed trapping him and a buddy. Parker's probably the only cave diver who died cave diving, yet made no mistakes nor violated any of the tenets of safe cave diving. In his last act, Parker forced his way tankless through the remaining tiny gap out, tunneling a passage through which his buddy escaped and lived. Perhaps it makes

Parker something of a saint for cave diving — blameless yet martyred, saving another in his sacrifice.

Mike and I strolled from his office silently into the balmy Yucatan night to unload tanks. There was nothing more to say about it — at least for now.

Two days later, Jan Willemse and I were gearing up at the main entrance to the Nohoch Na Chich cave system — the world's longest underwater cave. He and I were support divers for scientists from the University of Mexico researching the Yucatan aquifer.

"This one is easy," teased scientist Javier Alcocer. "All you have to do is swim and enjoy the dive." He opened a padded case with a short, cylindrical instrument, "This hydrolab will record depth, time, pH, salinity, visibility and oxygen as you go. We'll strap it between your doubles and you won't even know it's there."

A sight-seeing swim in the world's most beautiful, decorated, air clear, warm, fresh-water, no-current-to-speak-of cave? And the icing is we can do it for science? Sure, we can do that, Jan and I agreed.

We were to swim 3,280 feet into the cave at a maximum depth of 28 feet. "We'll be a bit over two hours or so," I told Javier as he bungied the hydrolab between my doubles. "See you then." And we submerged.

Nohoch is a wondrous cave and we were having a fun, relaxing dive while the electronic brain on my back did all the work. Jan led as we frog-kicked leisurely, marveling at the stalactites and other speleothems.

About 20 minutes into the dive and around 1,000 feet in, we hit thirds. We paused momentarily, unclipped and deposited our stage tanks. Switching to our back tanks, we continued — and that's when trouble hit.

My primary regulator was breathing very, very wet — of course, it had worked earlier when we checked our gear. Unaware of my problem, Jan swam on, and I followed, puffing and blowing to clear the water. I purged the second stage, hoping to blast out debris that might be causing leakage under the exhaust valve. It didn't work.

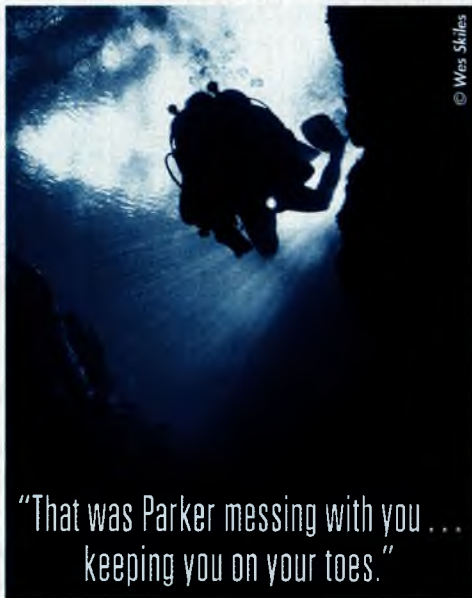
I'm ashamed to say I swam for ten minutes going further into the cave while semi choking before realizing that only an idiot would continue a cave dive with a leaky regulator. I needed to resolve this problem or abort the dive. I flashed Jan, waving my light and giving him a raised fist — hold the dive. He turned and glided in to assist.

I stopped and switched to my secondary regulator, hovering over a "reach gap" where a side line not quite intersects with the main line. Directly beneath me the side-line tied into a distinct stalagmite, with an unusual, large yellow line arrow unlike any other I'd seen in the cave.

With Jan giving me a light, I found a large pebble lodged in the face of my primary second stage against the exhaust valve. After flipping the stone free with a clothespin, I tried the regulator. No water, just nice dry air.

That was easy, "Let's go." I signaled Jan and we were off again.

About 75 minutes into the dive, we hit thirds on our back sets. We were approximately 3,550 feet into the cave, having passed the one kilometer mark. Turning around, now I led in the "first-in, last-out" cave diving practice. We were tiring a bit from swimming, but now the



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BY KARL SHREEVES



very slight current was with us.

We swam on for about 20 minutes. Things had gone so smoothly, aside from my regulator incident, that I found myself in sort of a relaxed lull as I swam, and of course, that's when trouble struck again. This time, it didn't appear minor.

Jan flashed me. I turned. Bubbles streamed from his secondary regulator and he signaled coolly but with urgency, "Shut me down!" On a cave dive, there's nothing more serious than runaway air; it's your life slipping through your fingers. I quickly twisted off the valve outlet to that regulator, stemming the escaping air. We paused, hovering in place while we sorted out the problem.

Jan shook and adjusted the offending regulator. After a moment of inspection, he signaled me to turn the valve all the way. As I did, I noticed something directly below us. Aiming my light for a better view, I spotted a line arrow. A bright yellow line arrow. Where a sideline tied into a distinct stalagmite.

We were in exactly the same spot where we'd stopped to handle my regulator problem — not even inches off the mark. And, just as my regulator had developed a problem, now, at the same spot, so had Jan's. Hair on the back of my neck stood as it sank in.

The rest of the dive passed uneventfully. After 137 minutes underwater, Jan and I surfaced at the cave entrance and turned the hydrolab over to a pleased Javier.

That evening back in Puerto Aventuras at the Project Nohoch base, I described the incident to Mike.

"That was Parker messing with you," he said without hesitating. I smiled at what I took to be a jest. He didn't.

"Parker?" I asked.

"Think about it. Nohoch is cave diver heaven. Where else would he be? He's just keeping you on your toes."

More reasonable rationale sprang to mind. You're more likely to encounter multiple problems on a long dive than a short one. As for being in the same spot, well, coincidence. This was logical. Understandable. Sensible. And unsatisfying. What about the photo? That night I took a second look at the photo over Mike's desk and noticed something I hadn't before. Clenched in Parker's right hand is a bag of caving gear. And perched on top is a large line arrow.

I like Mike's explanation. ■

Karl Shreeves is DSAT/PADI VP of Technical Development.



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# Meeting Mr. Big

## EYE TO EYE WITH A HUMPBACK

It's been a rare privilege for me to have had the opportunity to work up close and personal with humpback whales in various locations for over 30 years. I remember seeing pods at close range during the '60s in the Gulf of Maine. During these summer feeding migrations, we were able to approach individuals in kayaks and later snorkel with them where they treated us with a bit of benign indifference while they chowed down on hundreds of pounds of sand eels and krill.

But the water was cold and the visibility rarely more than 30 feet or so limiting our observation of these magnificent beasts to seeing only about half the animal at any given time. I longed for the chance to get some in-water time with the humpbacks where conditions would afford better filming conditions.

Back in 1971 I eagerly signed on with a yacht being delivered to Florida from the Virgin Islands. I was taking a brief sabbatical from working on a Navy project filming fast attack nuclear submarines. After hearing stories about humpbacks in the Silver Bank area between the Dominican Republic and Grand Turk, we decided to plan a stop on our way north. We arrived in mid-February and anchored about a mile from the eastern edge of the low barrier reef. That night we heard whales blowing all around us and like kids waiting for Christmas morning, we never slept a wink.

With the first rays of dawn we could see dozens of spouts and several displays of breaching as the whales flung themselves clear out of the sea in a joyful exuberance that was pure poetry. By nightfall we had exhausted ourselves after all-day snorkeling sessions with a non-stop procession of cetacean. After the first encounter we had returned to the yacht and erupted into excited stream of

consciousness babbling — each determined to out-shout the other in our enthusiasm.

We had swum with up to nine whales at once who seemed delighted at our cautious intrusion. Newborn calves had introduced themselves to us only arm's length away while their doting mothers hovered nearby. Aggressive male humpbacks had churned the water white with dramatic charges, head butts and tail slaps as part of their sexual posturing. And you thought a redneck bar on a steamy Saturday night could showcase some "men behaving badly" antics. . .

The last night we spent on the Bank had us staring wistfully at a sunset of impossible beauty when a mother and calf surfaced right next to the boat and lifted their heads practically into the cockpit. Standing on their tails and bobbing in the gentle evening sea, they positioned themselves with their heads turned to present eyes the size of hockey pucks that seemed to look right through you. At that point, the experience of swimming with our military's subs seemed pale by comparison.

That initial trip led to 19 others where I would visit every inch of the Silver Bank over the ensuing years. For most of that time, we would always have the anchorage entirely to ourselves and scarcely even see another vessel. Only in the 1990s did commercial operators begin carrying tourists to the area in limited numbers. Ironically, the uncharted confusion of the Bank and its threatening coral heads that historically led ships and yachts to give it a wide berth, would ultimately prove an irresistible draw for those seeking a whale encounter.

Theory has it that the females give birth sometime in the latter part of January but a birth has never been witnessed by anyone in spite of years of anxious search. On several occasions, I have observed whales that were obviously pregnant alter their normal swimming routines and disappear only to re-appear later that same day with an infant in tow. Where they go and how the birth is accomplished is pure speculation.

I've seen proud mothers obviously coaching their newborns in diving skills and breath holding as they make a grand tour to show off the new addition to the rest of the pod. During this period while nursing, the babies gain an average of 200 pounds a day. You can almost see them growing in front of you. I had a fraternity roommate like that once back in college.

Rarely will a mother and calf be seen without an escort male who takes responsibility for shepherding the pair safely. And woe betide the diver who dares to annoy the escort with aggressive behavior. Typically the male will position himself to cut off an intruder's access to the moth-



In the wild, a male escort protects the mother and newborn humpbacks.

My mind was racing.  
Was this a new born?  
Had I nearly stumbled  
on what every photog-  
rapher in the world had  
sought for decades?

BY BRET GILLIAM



er and newborn. If the hint is not taken, he may take more direct steps such as tail or pectoral fin slaps that are not exactly subtle and can leave a diver dazed or drowned. I've seen other males emit a stunning sonar blast to lash the offender with a bone-jarring underwater sonic boom. But this is unusual and takes pretty boorish, rude intrusions to provoke. Rush Limbaugh, take note and warning.

In 1993 I arrived on the Bank during the first week of February. It was blowing a solid 30 knots and beyond the protected lee of the reef a nasty six-foot swell made pretty tough sledding in the inflatables. After pounding myself into a stupor the third day with only a couple short encounters we decided to call it quits until the wind subsided.

For lack of anything else to do I went exploring in the shallows among the coral pillars and simply relaxed and enjoyed the scenery. Even here you could not escape the whales' presence as their haunting songs flowed over the underwater landscape and filled your ears as you swam. Sort of the ultimate in Sens-A-Round sound.

As I turned the corner on one of the massive coral heads that rise from the 30-foot depths to within inches of the surface, I came face to face with a mother and calf less than 10 feet away. They were resting and breathing softly with the baby lying next to his mother's watchful eye. It was the smallest calf I'd ever seen; no more than six feet in length and maybe 250 pounds. About my size, I reflected ruefully.

Not wanting to frighten the baby, I stopped and lay quietly at the surface with them. After a few minutes the pair did a slow turn and began to swim into even shallower water around the coral head. I decided to go around the head in the opposite direction so I'd meet up with them as they approached me head-on on the other side.

My mind was racing. Was this a new born? Had I nearly stumbled on what every photographer in the world had sought for decades? Certainly, the calf was the right size and he clearly was so young that he couldn't hold his breath for more than a few seconds. I cradled my camera and began to line up the shots. Sure enough, the pair was waiting for me as I eased around the massive coral buttress into water that was now barely 15 feet deep.

It was surreal to see this leviathan mother some 50 feet in length easing herself over the smooth sandy bottom. Her massive pectoral fins gently grazed the sand leaving a trench marking her trail while the baby rode the pressure wave just above her head. I moved to the coral head and clung to an outcropping to let them pass all the while firing away with my wide angle.

As the mother's 20-foot tail fluke filled my lens from only inches away, I began a slow pursuit and wondered to myself why no escort male had picked up supervision of the pair. Maybe the mother liked to give birth unbothered? Or maybe the rambunctious males were leery of the shallow water that threatened to strand them?

I was suddenly aware that the bottom was no longer 15 feet below me. My fin tips hit something solid when I kicked and I looked down thinking I'd let myself drift onto the coral head. Wrong! The male I had been speculating

on was directly below me having been masked in the gloom before. He now had set his sights on moving up to place himself between me and his new family. He had accelerated his slow swim and I now found him about to surface directly between my legs!

Now some might rationalize on daytime talk shows that "size doesn't matter," but at that moment in life I was firmly convinced that it was about to matter a whole lot!

To my left were the jagged coral branches of the reef top and Mr. Big chose that moment to raise his pectoral fin to just clear the hazard. His fin soared over the coral head like a stunt airplane turning around a course pylon. That effectively killed any escape in that direction. A quick look behind confirmed that the whale's back would make contact with me in seconds. I gulped a breath and dove over his head with my chest massaging his widow's peak on the way by. Finning to give us each some space I ended up about three feet off the bottom and under his right pectoral fin.

Okay, this isn't so bad, I thought. He'll just glide over me and then I can come up. Wrong again! He chose that exact moment to stop and simultaneously dropped his pec fin, neatly pinning me to the sand. I had always wanted a close encounter, but this was ridiculous. There I was flat on my back with several tons of deadweight pectoral gently anchoring me. I never even thought of struggling. I lay quietly and played dead. Rather aptly, I thought.

From my constrained view I could look the big guy in the eye from about five feet away. He articulated his gaze back to me and sized me up. After about 30 seconds he eased up his pec and moved ahead. I put one hand up and fended myself off his belly as he moved over me at a snail's pace. Finally the tail passed overhead close enough to let me count the smallest barnacles and I gratefully hit the surface for some much-needed oxygen.

While I was taking inventory of body parts and mentally calculating if I qualified for hypoxia-induced brain damage, all three whales came at me from the shallows. The male led the mother and her baby deftly through the reef and then waited for them to exit to the deeper water. We regarded each other without malice as he ended up once again on the surface right next to me. I fired off a few frames and then he moved gradually away into the blue with his charges. A picture of family values to please every southern Baptist on their way to a Disney boycott. From my perspective, it was definitely an E-ticket ride. ■

*Bret Gilliam is a 26-year veteran of the professional diving industry. He is president of TDI, CEO of Uwatec, and co-publisher of Deep Tech. He has been filming humpback whales in the wild since 1967.*

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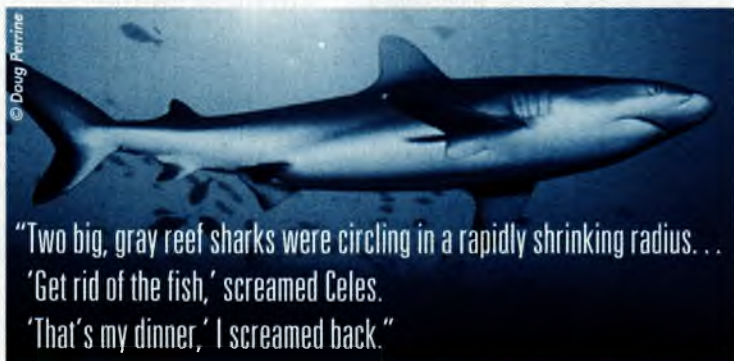




# Lessons of a Stringer

## BETWEEN THE DEVIL AND THE DEEP BLUE SEA

Like most of the moss-backs from my generation of divers, the early years of my diving career were devoted to a single-minded goal — converting the visible beauty of the world's reefs into edible protein. My nascent spear-fishing skills, which had hitherto only netted me mostly inedible puffers and other slow-moving fish, received a big boost when I was sent to Micronesia on a two-year Peace Corps assignment. Somewhat inexplicably, at least at first, I was "adopted" by a master Palauan spearfisherman who agreed to teach me all his secrets. Whenever we went out he speared nearly all the fish, but insisted that we split them equally. My end of the bargain was to carry the stringer. A very generous deal, I thought, wondering why no one else on the island wanted to be his partner.



"Two big, gray reef sharks were circling in a rapidly shrinking radius. . .  
'Get rid of the fish,' screamed Celes.  
'That's my dinner,' I screamed back."

It wasn't until we'd been working together for several months that I got up the nerve to ask him why he was so loathe to carry the fish stringer himself. His reluctance, it turned out, stemmed from an unpleasant incident a few years earlier when a reef shark had backed him into a ledge and he'd spent half an hour kicking it away with his fins. I'd had no such experiences, so I was a willing stringer-toter. Ignorance is bliss.

I was doubly blissed because I'd gotten myself involved with a local maiden. With her came the entire extended family. I suddenly moved from killing for pleasure to killing for necessity. A dozen or so hungry mouths were now dependent upon my fishing skills, or more accurately, my stringer-toting skills.

One of the new-found relatives liked to boast of his prowess in spearfishing in the golden days of his youth. He turned out to be an absolute hazard with a spear, but we figured he could at least make himself useful by following us with the boat when we did drift dives.

So one fine day with "Uncle Ray" at the helm, we headed out across the lagoon to one of the passes where,

on a falling tide, the millions of gallons of water within the lagoon go rushing out at high velocity to mix with the open sea. The tide was just starting to drop when Celes and I dropped over the side into the pass, leaving Uncle Ray with stern instructions to follow our bubbles.

As we drifted out the pass, the current tugged more and more insistently. At the outer corner of the pass we found the big fish. Celes, in his usual no-nonsense form, bagged two giant sweetlips in short order and passed them to me to string.

After we kicked off from the fish corner, it took only a few seconds before the now-irresistible current had pulled us out beyond the mouth of the lagoon. And, we had company. Two big, gray reef sharks were circling in a rapidly shrinking radius.

Celes gave me the thumbs-up signal and I agreed without hesitation. As we ascended, the sharks started coming in around my fins and I had to kick and jab at them with my speargun. If safety stops had been invented at that time, we would have dis-invented them. We shot full bore to the surface, ready to go flying over the gunwale and into the boat, but when we broke the surface there was no boat in sight. Nothing but empty ocean on one side and giant breakers pounding on the outer barrier reef on the other.

"Get rid of the fish!" screamed Celes. "That's my dinner!" I screamed back, kicking somewhat less effectively at the sharks now that I was bobbing about on the surface, trying to look for the boat and keep an eye below the surface at the same time. Faced with the double threat of being pulled out into the open sea (next stop — Okinawa?) by the current or attacked by the sharks, Celes began kicking for the breakers. Afraid to be left alone with the boys in gray I followed, although certain we could never survive the passage through the surf that was crashing onto menacing fingers of coral, now exposed by the falling tide.

"Stop!" I howled. "We'll never make it!"

"Get rid of the fish!" he answered. This time I considered it a little more seriously, but again, I couldn't bear the thought of coming home empty-handed. In truth it probably wasn't so much the prospect of a protein-free dinner as a subliminal suspicion that a correlation was developing between how well fed my domestic partner's family was, and how eager she was later.

As we reached the area where the water was full of little white bubbles washing back from the surf, one shark gave up the pursuit, which was good, because it was all I could do to keep track of the other in the blinding foam. Celes and I continued screaming at each other, but neither of us could understand what the other was saying over the

BY DOUG PERRINE



roar of 10-foot waves pounding on jagged limestone. One part of my brain recognized that even if I made it across the reef alive, I'd never be able to hold onto the fish and my speargun would become a deadly menace in the surf. But the primitive part of my brain refused to relinquish either item, even though the shark continued to demonstrate its willingness to relieve me of my burden.

Just as Celes began to bob in the cresting waves hurling themselves toward oblivion on the heartless reef, I began to notice a change in the tone of their thunder. A new harmonic had been added to the deafening roar. It was the hum of an outboard engine. I screamed at the top of my lungs and Celes turned around just in time to see the little wooden boat turning out the pass towards us. He quickly reversed direction and we put all our energy into pushing back out against the waves that were still threatening to carry us onto the reef. We were soon beyond danger of being macerated on the coral, but we still had our persistent tag-along nipping at my fins. It was hard for me to fend off the shark and swim at the same time, but Celes wouldn't slow down. I was beginning to get the feeling that he didn't want me close to him for some reason.

When we both launched into the boat on the same side at the same time, we nearly swamped it. Uncle Ray seemed perplexed that we'd somehow lost our aplomb out there on such a nice day. He stared quizzically at us as we lay panting in the bottom of the boat. Finally, one of us had to ask. "Ray, . . . where . . . were you?" I gasped.

"I ran out of cigarettes," he answered, as if that explained everything. "Then I saw a boat," he added, "over there," pointing to the far side of the lagoon. Watching the smoke curling out of his nostrils, we realized that while we'd been down on our dive, drifting out to sea, he'd made a six-mile round trip (on my tank of gas) to bum a smoke.

I don't think that Uncle Ray ever figured out why we didn't invite him fishing any more. I was actually surprised that Celes invited me again. But then I found out that he couldn't get anyone else to carry his stringer. As for my island sweetheart, she let me know, in her own unequivocal way, that the fish I brought home was not acceptable. It was too big. Too much trouble to clean. ■

*Doug Perrine is an STM contributing editor. He traded in the speargun years ago for a camera and shoots photos for a living now.*

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# Three-Minute Nightmare

## PLAYING CARDS WITH A MEXICAN FLUSH

Swimming was out of the question. All I could do was climb and crawl. I kicked and groped my way forward. . . As I fumbled through the murk, the guideline clumped in a tangle behind me.

Late in the summer of 1988, I traveled with a group of cave explorers to the state of Coahila in northern Mexico. Nearly two years before, we'd discovered a cave system shaped like a big inverted "T" and ending in two sumps — one lying some 1,500 feet from the 200-foot entrance drop, and the other a large "lake room" which had served up 150-foot depths and quickly exhausted the capabilities of my single tank.

This time, I was loaded for the proverbial bear. I now carried side-mounted steel 72s and drop bottles. As the group's only diver, my plan was to rappel down the breakdown cone, haul the gear through a hands-and-knees crawl and then carry it down a walking passage to where the ceiling dips to meet the water, dive the sump

and, hopefully, find dry passage on the other side. As a secondary mission, I'd brought along a slurp gun to collect a new species of blind catfish from the lake room.

We arrived at the pit entrance at dusk and set up camp. Anxious to get in as early as possible the next morning, we began rigging gear. In the process, someone kicked a pebble into the pit, and it fell to make a distant, but clearly audible "plop."

Water in the entrance shaft? A quick rappel down verified that the last 100 feet of the previously dry entrance was now underwater; it would require a long swim through passage that I had previously walked and over 200 feet of depth at the end of my earlier tie-off.

We'd come loaded for bear, not elephants. Hopes of finding dry passage disappeared. At least I could still do some collecting: I tossed a mop head into the pit and went to sleep under the beautiful desert sky, looking forward to a simple dive in the morning. I'd retrieve the mop head (hopefully full of interesting micro-organisms) slurp up some catfish and head home.

Morning brought another surprise. On our last visit, the water in the lake room had been crystal clear. This time, as I geared up on the rappel rope, I saw that visibility was quite poor. I tied my guideline onto my rappel rack and headed for the bottom of the shaft.

As I dropped, the needle swept through the depth gauge faster than I would have expected, Boyle's Law and wetsuit compression notwithstanding. I added air to my vest and wondered if I had a dump valve stuck open. Then I saw the bottom — it was rising to meet me and rushing by in fast-forward.

The dump-valve was not the problem. I was caught in an active, fast-charging underground river that was flushing me down the system, hurtling me toward a passage that didn't have another opening for miles.

I bounced off two large boulders before grabbing onto a third. The current immediately "starched" me like a flag in a hurricane. My mask flooded and skewed around to the side of my face.

Swimming was out of the question. All I could do was climb and crawl. I kicked and groped my way forward, unable to reel in my line, as it took both hands to make even a modicum of progress. As I fumbled through the murk, the guideline clumped in a tangle behind me.

Eventually, I made better progress, and the ambient light grew as I made my way back up the big entrance shaft. I remember how elated I was to see that big rappel rope dangling in the water. I remember being astonished that I'd escaped being bound hand-and-foot by the bird's-nest of line behind me. I remember seeing my friends' faces and realizing how very close I'd come to never seeing them again. And then I looked at my dive watch and saw to my amazement that it showed just three minutes.

Some of life's most educational experiences take place in moments. This was one of them.

What should I have done? Be aware that a flooded cave is an underground river, subject to the weather and its recharge zone. I could have made my initial descent on a climbing rope, with a jumarcendeur to get me back up, if necessary. Probably other things as well.

Would I go back? In a heartbeat. It's an exciting system — if it can move that much water, you can imagine the size of the cave that waits behind it. But when I do, I'll do it in light of my hard-earned knowledge — that every dive should demand alertness, and the water you don't respect just might be the water that claims you. ■

*Jim Bowden divides his time between Texas and Mexico, where he leads the pioneering Proyecto de Buceo Espeliológico Mexico y America Central, currently centering its attention on a quest for the bottom of Cenoté Zacaton. He holds the world record for the deepest open-circuit dive.*

BY JIM BOWDEN



# Algebra 101

The accident commenced as I rolled off the boat in a fullface rig. The tank came loose, and the only way to continue was with it under my arm.

The under arm cylinder accomplished a couple of things. It pulled the mask just off my face and it kept the air gauge cleverly hidden behind my back.

Plummeting down, the mask provided foam rather than air. This seemed bad, but turned out to be the best part of the dive. It was like breathing the head on a glass of beer.

At 80 feet the descent ended with a graceful, butt-first landing on the wreck. I adjusted the face mask in such a way that it free flowed, frozen wide open and made clear an unwillingness to continue.

Reaching backwards, I finally managed to grab my console. The dive had lasted two minutes and half the air remained in the tank.

A digression for kids who might stumble on this, and feel their time has been wasted learning Algebra. It's a simple equation — if you burn half your air in two minutes, it will all be gone in four.

Realizing that even the foam would soon be exhausted, I headed up. Panting like an overweight jogger, making the ascent as slow as possible, I cleared the surface like a breaching whale.

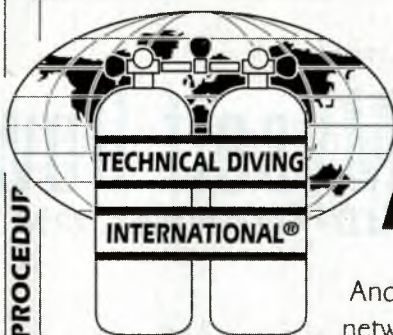
Regaining the boat, I laid on the deck in stupendous pain from a partially repaired abscessed tooth. (There's a lesson about dive dentistry here.) After five minutes of discomfort so intense I asked the captain to drop a weight belt on my head just for the distraction, there was a loud "POP" from the region of the tooth, and all was well.

— by Dave and Sue Millhouser

Recently named as the official Poet Laureates of Marine Services, a New England based salvage firm, Dave and Sue Millhouser are underwater photographer/free lance writers. They were recently selected as "artists in residence of Cape Ann Divers" by a manager unfamiliar with the difference between "artistic" and "autistic."

In real life, Dave is a cherubic bus salesman and Sue is a right wing social worker.

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# Selling Myself Down the River

## MID-CHANNEL ON THE ST. CLAIR

Every diver has his or her home water. Mine is the St. Clair River — the fast part, where Lake Huron feeds a perpetual six to nine-knot torrent, and diving is done in the shadow of the Blue Water Bridge, joining Port Huron, Michigan and Sarnia, Ontario.

Underwater, this stretch of river offers teeming aquatic life, artifacts galore, eight shipwrecks within a mile of one another and the challenge of diving in a continuously swirling underwater typhoon. Topside, the St. Clair is one of the busiest waterways in the Great Lakes, with lake

"boats" up to 1,000 feet in length plowing majestically along in the company of a myriad of sailboats, fishing vessels and personal watercraft. Call me crazy, but I'm very comfortable diving here.

Maybe you should call me crazy because, early last summer, that feeling of familiarity got me to shave several things a little more than too close for — well — comfort.

The surface traffic creates a soft overhead in the St. Clair. Entries and exits are made at the seawall; surfacing in mid-channel is not done under anything less than Chernobyl-like circumstances.

I knew this as I snuggled up my fins for a dive on the *John C. Martin*, a wooden

wreck lying just above the bridge in the swiftest part of the river. I'd be making the dive solo — not unusual in the upper St. Clair where the continuous Olympian flush separates most buddy teams in a matter of seconds. My 100- and 120-cubic-foot tanks were locked in the back of my van, waiting for later when friends would join me in exploring some larger downstream wrecks. For the first dive I had planned — out to the *Martin* and then back to the seawall using a rogue eddy I'd discovered the week before — the steel 72 I wore would allow me a safety margin of at least 50 percent. I had full confidence in my ability to make the dive. It would be a "piece 'a cake."

Adjusting my buoyancy in the relative calm of the near-shore shallows, I headed out and began a steady

kick, assisting myself with irregular boosts off the odd boulder and letting the current angle me downstream toward the wreck.

In less than two minutes, at 53 feet, the hulk loomed out of the underwater mists. A one-handed snag whipped me behind the log-jam beside the *Martin*. Working hand-over-hand through stiff current, I pulled myself into the tiny shadow of calm behind the hull and began exploring the century-old shipwreck. As usual, I marveled at how calming and serene it was to poke through the ruins of bygone human tragedy.

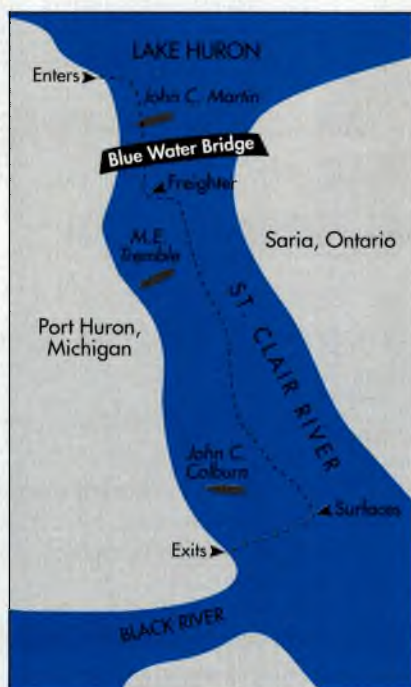
Eight minutes later it was time to head home. Pulling back to where I'd found my "seawall express" seven days before, I secured my mask with one hand and held onto a timber with another. But rather than aiming me home the current swung me and pointed my fins out toward mid-channel. The St. Clair was being her capricious self, changing nuances of current with shifts in lake levels and prevailing surface winds.

The pounding of the giant diesel engines grew until it seemed to resonate in my very bones and a skyscraper-size shadow darkened the surface above.

O—kaaay. This is why you have a Plan B, right? Releasing my handhold, I let the current waft me down through the middle of an 85-foot hole and back out over the water-polished round stones of the river bottom. Sturgeon, bass and the occasional Budweiser can came and went as I rushed along with the velocity of a video-game character. I relaxed and let my breathing slow; in a few minutes, I could start a steady kick

shoreward and put myself on an intersect course with the *M.E. Tremble*, another old wooden wreck about half a mile downriver. From there a debris field and submerged clay banks would provide a current-sheltered route back to the seawall, albeit with a somewhat long walk back to the van.

The thrum of an approaching engine tossed a second wrench into the works. A freighter was approaching and



Impromptu route. The St. Clair current dragged Tom Morrisey one-and-a-quarter miles downriver and into the path of a freighter.

BY TOM MORRISEY



by the rate at which the sound was growing it sounded like I was right in its path.

I glanced at my dive computer. It read 65 feet.

Chilly. Even fully loaded, lake freighters don't draw more than 40 feet of water — any more and they can't make it through the locks at Sault Ste. Marie. Still, it was a bit unnerving as the pounding of the giant diesel engines grew until it seemed to resonate in my very bones and a skyscraper-size shadow darkened the surface above.

The freighter couldn't touch me, but all that displaced water sure could. The current came suddenly to a complete stop — and then I began moving twice as rapidly as before — east, toward the middle of the river.

It was like an encounter with an amorous gorilla — resistance was out of the question. I let the freighter's wash sweep me along and after a couple minutes of staring at a river bottom stuck in fast-sideways, I caught the normal current again.

My air gauge showed me at half my starting pressure — the amount with which I'd originally planned to end my dive and I was nowhere near the end. The depth gauge read 60 feet. Normally, at 60 feet, I should have been seeing some familiar landmarks on the bottom — a lost freighter anchor, a pile of grindstones, an old self-unloader boom. Nada. I was rushing along over a bottom composed of pebble-size stones, a landscape with which I was absolutely unfamiliar.

Half my air was gone and I had no idea where I was.

Several minutes passed with no change in the stone-strewn bottom. The *Tremble's* stern sat at 53 feet; I decided to kick west, toward the American-side seawall, until I was at 55 feet.

Most in-current navigation in the river is performed by pulling from one boulder or piece of wreckage to another. Kicking is only moderately effective and I didn't want to over-kick and increase my use of already dwindling air. It seemed to take forever to gain five feet of bottom elevation and, when I again paused to look at my gauges, the bottom began to drop gradually away. I was drifting back toward mid-channel, losing what ground I'd gained.

The good news was that I knew where I was. The St. Clair curves slightly eastward about three-quarters of a mile beneath the Blue Water Bridge. The effect of all that water

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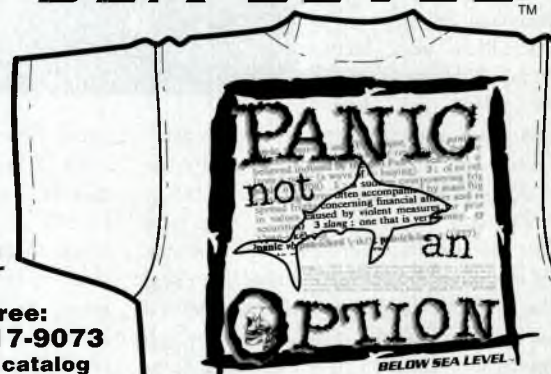
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# Exploring the Twilight Zone with Richard Pyle

BY JAMES D. WATT

Every generation has its explorers and adventurers, the select few that feel the boundaries of the present just don't fit for them. Richard Pyle, at age 29, is one of them. One of a new breed of scientists, he is using new technologies and methods to explore the seldom seen reaches of the seas, the "biological twilight zone," the part of the ocean that lies between 200 and 500 feet of water. This area is too deep for conventional scuba and cost-prohibitive for deep water divers.

A graduate student at the University of Hawaii, Pyle specializes in ichthyology, the study of fish. He has spent most of his life in the Hawaiian Islands and has been diving since the age of 9. His other passion (besides fish) is technical diving.

**JW:** Rich, your focus today is the exploration of what you have described as the "biological twilight zone." Could you describe this term and what made you decide on studying this area of the ocean?

**RP:** The term "twilight zone" has a variety of meanings in biology. I have been using the term in reference to coral reef habitat at depths of about 200-500 feet, which spans the transition from biological communities that are driven directly by sunlight energy, to communities that rely mostly on nutrients sinking from above. In other words, it represents the lower limit to which enough sunlight penetrates to drive photosynthesis.

I first became seriously interested in the marine life that inhabit this zone while I was living in Palau. That's when I began to realize how vast our ignorance of the biology of this zone really is. Researchers using conventional scuba cannot safely explore these depths.

**JW:** You have switched over from open-circuit equipment to a rebreather for your work. What benefits have you derived from this technology?

**RP:** Closed-circuit rebreathers provide three fundamental advantages over open-circuit scuba. The first is a much more efficient use of gas. My mixed-gas, open-circuit scuba rig included over 250 cubic feet of breathing gas, and allowed me to stay at 300 feet for a maximum of about 15 minutes plus decompression.

On the rebreather, I use about 2.5 cubic feet of gas per hour of dive time

regardless of depth, so 25 cubic feet of gas will keep me going for as much as 20 hours. Thus, with one tenth the gas supply, I get a ten-fold increase in the amount of dive time. That's a 100-fold improvement in gas efficiency.

The second fundamental advantage of closed-circuit rebreathers is that they allow for optimization of the gas mixture, to minimize decompression obligations. A diver who spent 30 minutes at 100 feet using

conventional air scuba would have to decompress for 15 minutes; a rebreather diver wouldn't have to decompress at all. After an hour at 100 feet, the scuba diver would owe an hour and a half of deco time, whereas the rebreather diver would owe only 15 minutes.

The third advantage of rebreathers is that they are quiet. Not only does this have a pro-

found influence on the behavior of certain kinds of marine life, but it also makes the dive much more pleasant. Now, whenever I make an open-circuit dive, it seems so noisy! There are other more subtle advantages to rebreathers, such as warm moist breathing gas and more precise buoyancy control.

**JW:** What finally caused you to make the switch in technologies?

**RP:** Ever since I started doing deep dives, I've always known that rebreathers were the way to go. I switched to the rebreather technology as soon as the opportunity presented itself, which was when Bill Stone and Richard Nordstrom of Cis-Lunar Development Laboratories provided me with two of their prototype units. This was very lucky for me.

**JW:** Do you see any new technologies on the horizon that would make your work easier?

**RP:** I know Phil Nyutten, the guy who developed the Newt Suit. He's been working on a new design that he calls his "100-meter" suit. He wants to make it rated to at least 100 meters depth, weigh less than 100 pounds, and cost less than \$100,000.

That seems like a lot of money, but when you think about the possibility of staying at 300 feet for 24 hours or more with absolutely no decompression, it seems more than worth it. Whenever I listen to him describe his plans, my heart starts pounding. I hope he can make it a reality.



hitting the curve, with its submerged network of clay banks and sand bars, is that the flow "reflects" off the area below the shallows and pushes steadily toward mid-channel.

The bad news was that I'd missed the *Tremble* entirely. There's a slight plateau of somewhat shallower water out past the wreck in mid-channel and I now realized that this was what I'd been following.

And the worst news was my knowledge that the current in this section of the river is inexorable. The few people who dived this section usually started about where I was with topped-off, large-capacity tanks. My little steel 72 was down into triple digits and falling with each breath.

All I could see was the black steel bull and frothing bow wave of an absolutely huge ship...

I drifted and listened. There was the shrill underwater sound of outboard motors, an indifferent could-be-near/could-be-far whine. I could hear a freighter engine thrumming away — the one that had passed over me earlier? And I knew that any sailboats shuttling over me were doing so silently, their keels reaching down like oversized underwater plow-blades.

I kept up a steady kick to avoid losing further ground. There was a fractional hope that I might pass close enough to the hulk of the *John C. Colburn* (yet another century-old wreck) to make a dash for it and find calmer water back to shore. But my air gauge told me I was grasping at straws; the needle passed 500 psi and kept dropping.

A tiger musky swam near and gave me this what-the-heck-are-you-doing-here stare. Darned fine question — I wished I knew. When the gauge hit 200 psi I decided to make an orderly retreat, before circumstances turned it into an all-out rout.

I would have given myself a good swift boot in the rear, but I couldn't stop kicking or I'd lose even more ground. Still maintaining my westward plod, I began to rise, cursing my stupidity with each dissolving digit on the dive computer. Viz was about 20 feet; at 40



feet of depth, I lost sight of the bottom and swam in a luminous penumbra, my bubbles the only reference to up and down.

At 30 feet, I began revolving like a barber's pole, looking in all directions for approaching bows or keels. As my upraised hand kissed the surface, I hoped none of my friends were on shore, watching Morrissey breach in mid-channel like a St. Clair rookie.

I needn't have worried. I couldn't even see the shore. All I could see was the black steel hull and frothing bow wave of an absolutely huge ship. . .

"ALGO WAY," the four-foot white bow letters said.

A little aside is necessary here; Great Lakes divers pride themselves on being knowledgeable about freighters (even the ones that are still afloat). During forays out into the lake, it's common to make wagers on one's ability to identify a "boat" and detail its stats when all one can see is a stack-smudge on the horizon.

With the knee-jerk reflex of a 12-year-old baseball-card collector, I thought, "Algo Way. Length, 650 feet; beam, 72 feet; drawing 40 feet of water at plan load."

And there was something else. I pondered it a split second until it came, "Oh, yeah — AND IT'S GOING TO KILL ME!"

The image of being bludgeoned by a steel snout, then tumbled along the length of two-and-a-quarter football fields' worth of plate steel before finally being Cuizinarted by a 12-foot bronze propeller was enough to shoot a quart or two of adrenaline into my palpitating heart. I rolled onto my back and started a shoreward kick that had to have raised a rooster-tail. Seconds later, the freighter's bow-wash added a body-surfer boost to my efforts.

I had to hang on the seawall ladder-rungs and rest for five full minutes before I had the strength to pull myself up, over the river-walk railing and back onto terra firma. My van, parked where I'd originally planned to exit, was a tiny blue dot more than a mile-and-a-quarter upriver from where I'd finally come to shore. I thought of my cavalier attitude at the start of the dive.

"Piece 'a cake."

Right. . .

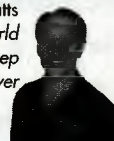
. . . Only on this piece, I'd darn near choked to death. ■

*Tom Morrissey is the editor of the ADJ; he still dives the St. Clair regularly.*



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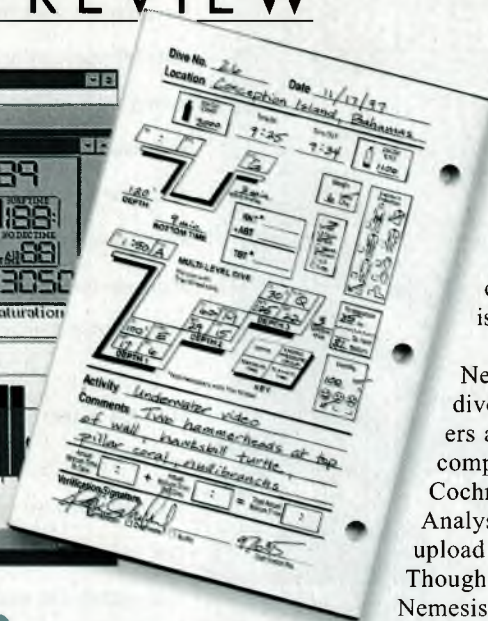
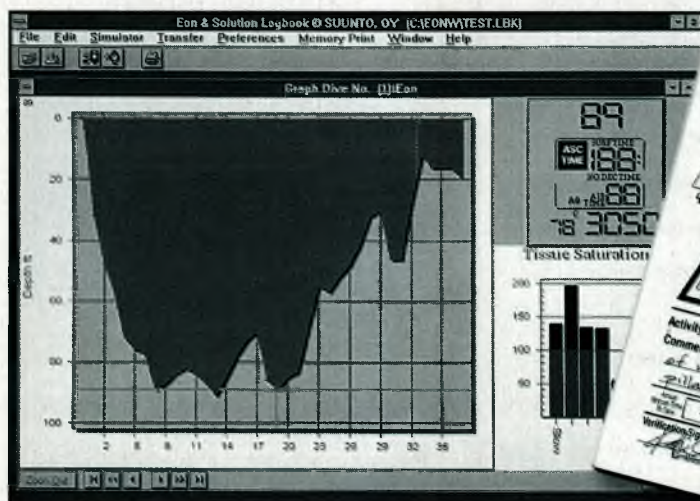
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ter understanding of all dive parameters. Gas mixtures can be added or subtracted to explore decompression contingencies or oxygen toxicity issues.

Cochran manufactures the Nemesis IIa and Commander dive computers. Both computers along with several Beuchat computers manufactured by Cochran use the DOS-based Analyst software to perform the upload and dive log functions. Though the Commander and Nemesis IIa computers tested well, the limitations of the DOS-based software make Analyst more difficult to use than other competing programs. For a DOS-based program, however, Analyst offers excellent graphing and logbook functions. Cochran is rumored to have a Windows-based program in the works that will alleviate many of the DOS issues.

Another leading manufacturer that produces a PC interface for their dive computers is Uwatec. The engineers at Uwatec put their thinking hoods on and developed DataTrak. The Windows-based program offers the standard logbook and graphical display functions found in most competing packages, but allows the interesting feature of actually programming certain aspects of the Aladin computer. Uwatec also ships a handy device called Memo Mouse with the DataTrak software. Memo Mouse is basically a buffer that is used to temporarily upload data from the Aladin thereby more than doubling the number of dives the user can retain before placing the information on the PC. This, coupled with the simple elegance of the compact upload cable make it an ideal travel companion.

One of the first manufacturers to produce a PC friendly computer was Orca. The Phoenix computer which superseded the Delphi computer requires tank pressure be applied to the unit following a battery reset to initiate the upload sequence. However, as the Pilot computer is not air integrated, uploads are initiated by placing the unit in a special upload mode. The software that accompanies the upload unit is called Data Reader and, when purchased, the user must specify the type of computer they own as the software is specific to the Phoenix and Pilot. Once data has been uploaded to the PC, dives can be re-calculated providing an excellent

## PC Friendly Dive Computers

### INTERFACE TECHNOLOGY

TEXT BY DALE S. HARROD

**B**ack when you learned how to dive, you bought a logbook and diligently recorded each dive profile by hand. You proudly toted that logbook around until the edges were torn and the pages so waterstained that you couldn't even read them. Then you got savvy and bought a dive computer. Today's dive computers are built with logbook functions that automatically record and store your dive profile information — bottom time, depth, temperature, etc. Now you're ready for the next step — to find software that lets you upload your dive computer's data to your PC where you can analyze and store it.

Of the dozens of dive computers available, only a select few offer integration to the PC. These manufacturers are Dive Rite, Cochran Undersea Technology, Orca Division of EIT, Uwatec, Oceanic, Dacor, USDivers and Suunto. All of these dive computers require a proprietary upload terminal and software to retrieve data. To date, manufacturers have not created a standard upload protocol or file format. There is an effort underway to standardize the protocol and upload units, but we'll have to be content with the current state of things for at least another year.

All dive computers record a diver's profile and store it in memory. This storage process is typically cyclical with the oldest dive data being over-written first. The number of dives recorded varies substantially between manufacturers and is

directly dependent on the amount of RAM (Random Access Memory) built into the computer. In the recent past, memory has been expensive and bulky with respect to the size of dive computers. With the advent of physically smaller memory chips and a reduction in price due to mass production, many computer manufacturers are increasing the amount of dive data that can be stored.

All manufacturers include proprietary software with the interface unit. The software is used to upload data from the dive computer and store it in an electronic logbook. All of the software packages tested were Windows based with the exception of the Analyst by Cochran.

Dive Rite Manufacturing has taken the next step in both dive computer technology and dive computer interface technology. Soon, Dive Rite will be announcing the release of a new program, tentatively named TekLogic. It is a Windows-based software program that is used to upload and save dives to a logbook. The program is designed around the Windows 95 Explorer style interface and is extremely easy to use. Another innovative concept of this program is the ability to export the uploaded dive information to the Voyager Desktop Decompression System. This allows the user to dive the computer, upload the information, export it to Voyager, and then calculate repetitive dives or manipulate the dive to gain a bet-



pre-dive planning tool.

Oceanic offers a PC friendly solution for three of their computers, the DataTrans, DataPlus and Data 100. The DataTrans and DataPlus utilize the OceanLink software package to upload stored information and the Data100 computer uses a program called OceanLog. Both software packages incorporate similar logging and upload features with minor differences related to the particular dive computer and an interactive simulator feature found in OceanLink that allows the user to calculate dive profiles before diving. Dives are rendered on the screen with top notch graphics and are simple to use. OceanLink and OceanLog are available in Windows 3.x and Windows 95 versions.

Dacor sells the Extreme Access dive computer accompanied by Accessware software package. Accessware, developed by the 2002 Design Group is also available in Windows 3.x and Windows 95 and is similar in look and feel to Oceanic's Oceanlog package. Uploading from the dive computer is accomplished through the use of infrared light technology instead of an electrical contact configuration. This makes the unit less susceptible to dirt or salt buildup on the upload contacts.

USDivers manufactures the Matrix Master computer. Windows 95 and 3.x users will appreciate the simplicity of the MemScan software package used to upload and catalog dives. Though no advanced features such as a dive simulator are incorporated into MemScan, the overall ease of use makes it a valuable commodity for any diver. As with Oceanic's and Dacor's computers, infrared light performs the physical upload connection.

In the United States, SeaQuest resells the Suunto line of computers which are PC compatible. Though the same software package is used for all Suunto computers, the Solution and EON computers have different upload terminals due to the physical size and shape of the dive computers. Currently, all of the computers record data at the same rate but the yet to be released Suunto Spider will be faster. The Windows-based software offers perhaps the best search and report printing capabilities of all of the software packages tested.

All of the computers and software programs examined for this article offer an efficient means of electronically tracking the users' dive history. Though some offer more bells and whistles than others, all of the programs functioned as advertised and would be a great tool for any diver's bag of tricks. ■

*Dale Harrod owns Diverse Technologies, Inc. in Ft. Lauderdale.*

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# Let There Be Sound

## OTS GOES HOLLYWOOD

TEXT BY KATIE SCHICKEL

**H**ollywood's figured something out — scuba diving is cool. Very cool.

And in the last decade mainstream media has started cashing in on the beauty, the adventure, the intrigue and, well, the coolness of scuba diving.

Since the 1950s when Jacques Cousteau paved the way for underwater film makers, mass consumers of the *Leave It to Beaver* era have changed their tastes from Barbara Billingsly to Gabrielle Reese. Generation Xers are seeking more thrill sports, and the media has poised itself to feed the latest trends. Adventure sports like scuba diving, sky diving, rock climbing, snowboarding and white water rafting pop up in the most visible corners of our TV and movie screens. Now, as testimony to the hipness of scuba diving, *Baywatch*, the single most successful television series in the history of the world (God help us!), shows segments of its bodacious lifeguards scuba diving in Southern California waters.

Big dollar box office movies like *The Deep*, *Sphere*, and *Speed II* are using scuba diving more and more to entertain. Television networks embrace diving in everything from Discovery Channel documentaries to trendy sitcom episodes. Winds of the coolness of scuba diving have even blown down Madison Avenue, and now we see the sport used to sell everything from geriatric vitamin drinks to candy.

In the highly competitive world of television and film, where billions of dollars are at stake, Hollywood has looked to dive engineers and cinematographers to meet

its specialized demands. This avenue of diving has opened up doors for a select few in the dive industry who have wooed producers and marketers with their talent.

Such is the story of two Navy Seals.

Thirteen years ago, Mike Pelissier and Jerry Peck began their multi-million dollar Ocean Technology Systems corporation in their garages. Their goal was simple. As former Navy Seals, they wanted to build an underwater recall system the Navy could use to safely signal divers out of the water. In their days of Navy diving, underwater firecrackers were detonated to signal divers to the surface.

They started OTS in 1984, addressing the military's need for underwater communications systems. Their clients included the Secret Service and FBI, as well as all the branches of the military. Soon they got into commercial work for search and rescue teams and eventually started making communications systems for recreational sport divers.

Now with 40 employees, OTS is the place Hollywood turns to make movies work.

Their initial foray into the silver screen began in 1990 with a film called *Expedition Earth*, an ESPN special. The challenge was to design an underwater communications system that would allow "real time" sequences where the talents in the film could be recorded during a Cocos Island dive trip. The director wanted to record sound during the actual dive, rather than dubbing it in later.

"It was the first time you have a talent underwater who can speak," OTS

President Mike Pelissier says. After much tinkering, the OTS sound engineers managed to capture "real time" communication of studio quality sound on film. "What makes it exciting is when the actors can talk about it while it's happening," he says.

That same year the two found themselves in New York City accepting a national Emmy award in the category of innovative technical achievements. The award was as unexpected as their corporate segue into the movie industry. "When we won the Emmy, Jim and I laughed for a week about it," Pelissier says. They simply couldn't believe their careers as military divers eventually led them down the paparazzi catwalk. But in the high stakes movie industry where a production company is doling out up to \$200,000 a day to get the shot, there was a gaping need for professional sound technicians with underwater capabilities.

Whispers of their expertise in underwater communication spread rapidly throughout the movie industry and wham! — ever since they have exploded into the movie business as technical consultants for virtually every major motion picture and TV show with underwater scenes.

Although they're invisible in the finished product, OTS was probably on the set of any underwater action movie you see today. They work regularly on television projects for *American Journal*, *When Animals Attack*, *Baywatch*, *Baywatch Nights*, *National Geographic*, *Seaquest*, and *National Public Radio*. Their movie milieu includes *The Abyss*, *Titanic*, *The Prince of Tides*, *Sphere*, *Speed II* and countless others.

On a typical movie set, says Pelissier, coordinating the actors, gaffers, grips, safety divers, stunt doubles, light technicians, cameramen and director takes some serious communication in an environment where you can't even tell from which direction sound is coming. While 20 to 30 people working all together on a dry set can be hectic, taking the group underwater can mean mass confusion.

That's where OTS steps in. They set up the right equipment for the job.

In the making of *Sphere*, the new release starring Dustin Hoffman and Sharon Stone (see story, pg. 16), the OTS team set up an underwater recall/P.A. system that allowed the director to be heard by all the divers at the same time. Custom-made deep sea helmets (from Diving Systems International) were designed to operate with the OTS SSB-2001 wireless, or through-water, system which allowed the actors to communicate with each other as part of the script while the director listened topside. The wireless system also allowed the director to speak individually



to support crew to give specific directions. For tight shots where the camera zoomed in on an actor's face, they used a hard wire that ran from the actor's helmet up to a receiver on the surface for the best sound clarity in the quietest setting.

When you go to see *Titanic* this season, you'll see a full-scale replica of the legendary ship that was built for the movie. You'll see amazing underwater shots. But you won't see the wireless communications systems that Pelissier and his team set up in four separate tanks for the scripted underwater action scenes.

Their presence, though critical, is invisible. On a shoot for an episode of *American Journal*, for example, the objective was to film a diver feeding sharks in the Bahamas. During filming, one cameraman heard the director telling him to move left, while the other heard the order to move in fast on the sharks. In the finished product, what we, the audience, heard was the actor's spontaneous reactions to what he was doing at the time.

Communication is something we take for granted. But as every diver knows, something as simple as getting your buddy's attention underwater can be a great undertaking. In some cases, the success of the OTS sound equipment has been too good. While filming *The Abyss*, the clarity of the dialogue was so crisp, the director later dubbed in background noise, like the sound of bubbles, for effect.

The importance of a working communication system becomes evident once the film is shot and goes to the editing room. If a scene is destroyed because a safety diver inadvertently slipped into a shot, the preventative cost of reshooting would cause a serious editing conundrum. Getting it right the first time is important.

One part of the job Pelissier says is easy to stomach is training the actors in the use of equipment. During filming for *Baywatch*, Pelissier had the task of teaching the *Baywatch* Barbies in the use of a fullface mask with Buddy Phone. The job required one-on-one training with four of the femme fatales at an hour a pop. What can you say — he's a slave to his work.

His 10-year-old daughter, on the other hand, was more enamored with the cast of *Full House*, whom he worked with on an episode in which the lead characters learn to scuba dive at Disney World.

Clearly, mainstream media has a burgeoning interest in the underwater world, a realm once known only to a handful of divers. "I see more and more of it every year," Pelissier says. "It's all about action underwater — people seem to like that." ■

*Katie Schickel is the editor of STM and a film aficionado.*

# Online Travel Agent

## STO AND TRS MERGE

In the cyber jungle, you don't want to swing on the wrong vine or you may end up sharing a tree with a big, hairy ape. Internet links are the name of the game and finding the right links can pull you through the electronic jungle unscathed.

*Scuba Times Online* has "linked up" with Travel Reservation Systems (TRS) to create the most comprehensive online dive-related travel directory in cyberspace.

Here's how it works. Let's say you want to take a liveaboard trip to Costa Rica.

click on the "cruise and resort" icon, and your online travel agent takes you to a listing of all the providers (both liveaboards and resorts) for Costa Rica.

Next, you click on any of the providers and their home page comes up with pictures of their boats and descriptions of their services. You read it, you're sold. Now you can check on availability, prices, ports of call, minimum deposits and even which class of room you wish to stay in.

A few more taps at the keyboard and now you have reservations, which you can check on, update and revise at will, without even picking up the phone.

But wait! Suddenly, the in-laws come over and spill the beans about an early Christmas present. They want to treat the whole family to a midwinter vacation in Greece. Great, you think, now you'll be able to afford that new swimming pool this summer, but what about the diving?

TRS will help you plan the whole trip from diving to accommodations to other activities for the rest of the family like hiking, golf, biking and skiing. A little more surfing will yield all the information you could possibly need for your Greek Odyssey.

So maybe you don't have philanthropic in-laws and you're on a tight budget. The "hot deal" link delivers you to

a listing of vacation packages at discounted fares — from accommodations to dives.

How does this differ from the prolific pack of travel websites on the Internet? Unlike others, TRS allows providers to enter their availability directly into the system rather than going through a webmaster or web manager, thus, the information on the site is literally up-to-the-minute. And once you make your reservations, this information is automatically forwarded to the provider.

Now click back to the STO home page. From here you can keep an eye on weather forecasts around the world. This, of course, can save a few vacations from doom by planning around the hurricane season. The links are limitless. In fact, with already over 500 pages and more on the way, no other dive-related website offers more goodies for the traveling diver.

— Katie Schickel



You go to the STO home page ([www.scubatimes.com](http://www.scubatimes.com)) and click on the TRS button. From there you click on "destinations" and come to a list of all the dive-related destinations in the system including places from the Caribbean to the Pacific, Europe to Africa and the Middle East, to the United States and Central America.

So you click on Costa Rica and a travel page pops up with general information about the country — historical background, climate, population, political and cultural currents, etc. On the left of your screen are a few icons which pull you through the links. You hit "view map" and a map of Central America pops up, putting Costa Rica into global perspective. You link into "traveler info" which gives all the need-to-know items like entry requirements, language, currency, transportation within the country and important contacts. Now you



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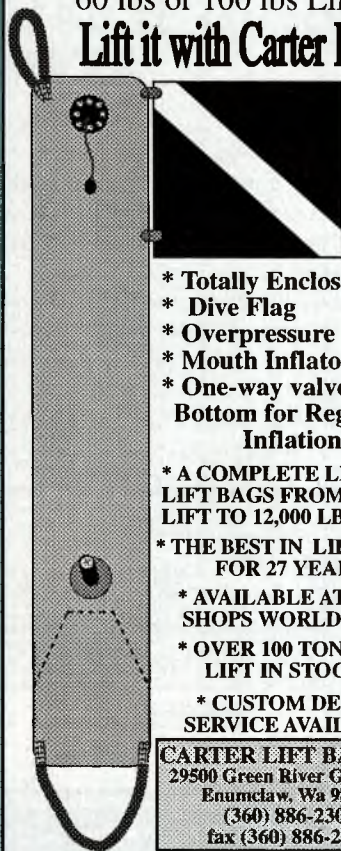
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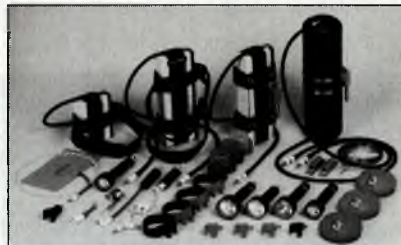
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## DIVER'S **DATEBOOK**

### DEMA 98

Instructors, assistant instructors and divemasters will be able to participate in the Dive Equipment and Marketing Association trade show, DEMA 98. This is the first year that assistant instructors and divemasters have been invited to attend DEMA independently, without sponsorship from a dive store. DEMA 98 runs from January 28-31 in Anaheim, California. For registration information, contact Epic Enterprises/PGI at (619) 294-2999.

### Video/Photo Contest

The 22nd Annual Beneath the Sea underwater video and photo contest is open to divers from the United States and Canada. The contest deadline is December 31, 1997. Winners will be presented at the Beneath the Sea underwater consumer exposition March 20-22 in Seacaucus, New Jersey. Prizes include a week aboard the *Cayman Aggressor* and a week aboard the *Caribbean Explorer* diving Saba. For contest rules, send a self-addressed, stamped #10 envelope to BTS, 495 New Rochelle Rd. #2A, Bronxville, NY 10708.

### Photo Tournament

The Monterey Underwater Photography Tournament, sponsored by Nikon, will be held on November 14-16 in Monterey, California. This contest is a spin-off of the Nikonos Shootout. For entry forms contact Aquarius Dive Shop at (408) 375-1933.

### NACD Meeting

The National Association for Cave Diving welcomes all divers to the NACD 29th Annual Seminar to be held November 14-16, 1997 in Gainesville, Florida. The weekend includes notable speakers, presentations on cave exploration, workshops, and guided dives of local cave sites. Established in 1968, the NACD is a volunteer cave diving organization. For more information or to register, contact Swift Current Productions, Inc. at 800-453-2983 or via email at [undersea@gate.net](mailto:undersea@gate.net).

### Commercial Dive Conference

The Western Chapter of the Association of Diving Contractors and the Historical Diving Society USA will be holding a joint conference in San Pedro,

California on November 6-8, 1997. The ADC program will include information for commercial divers and diving contractors. For more information on the conference contact Chris Roper at American Pacific Marine, (805) 488-6428 or the Historical Diving Society USA at (805) 963-1331.

### Ft. Lauderdale Awarded

In a proclamation, the Broward County, Florida Commissioners declared September as Scuba Month for 1997 in recognition of the environmental and economic benefits of promoting diving.

Neal Watson and Jean-Michele Cousteau were present at the ceremony and were recognized for their work in furthering awareness of the reef and wrecks of Broward County.

### Free Diving Record

Meghan Heaney-Grier, 19, broke her own national free diving record on August 25 off Big Pine Key, Florida, by plunging 165 feet on a single breath. Heaney-Grier, who works as a fashion model in Miami, earned the US title (for both women and men) in the constant weight category last October by diving 155 feet. The women's world record is currently held by Cuban diver Deborah Andollo at 203 feet, achieved October 5, 1996.

### Red Sail Awarded

For the third time, Red Sail Sports Aruba received the prestigious Artousa Award for the "most supporting and outstanding watersports company" in Aruba. Artousa, the Aruba Tourism Scholarship and Award Foundation, was founded to raise scholarship funds for Aruban students who wish to pursue a career in the tourism industry.

### New BCs

Poseidon Diving Products has expanded its BC line. Distributed through SEArrious Fun Inc. in the United States, the new BCs include the Clublift and Techlift 97 in addition to the Powerlift, Multilift and Techlift originals.

### Correction

There was an error in our July/August 1997 issue. The *STM* Online article (pg. 76) concerning the use of birth control pills should read "prescribe" and not "proscribe."

## Environmental Footnotes



The Luis Brion

### Aruba to Sink Ship

The Aruba Watersports Association is petitioning for the installment of a new underwater park and the sinking of the *Luis Brion* ferry to create an artificial reef in Aruban waters. The *Luis Brion* is a 270-foot long ship designed as an auto ferry. The sinking of this ship would increase Aruba's recognition and appeal as a world-class wreck dive destination. The Aruban government is supportive of the program. To show your support for the project and to help expedite park legislation, you can email Greg Hainline AWA president at [redsail@setarnet.aw](mailto:redsail@setarnet.aw).

### Live Rock Collecting

The live rock industry has asked the Gulf of Mexico Fishery Council to lift the recent ban on collection of wild live rock. ReefKeeper International is asking groups and individuals to join its petition campaign to oppose reopening of live rock collection. For more information contact Alexander Stone, ReefKeeper International at (305) 358-4600.

### The Perfect Gift

Still searching for the perfect Christmas gift? Adopt a 10-foot long, 1,000-pound manatee for someone you love. For a \$20 annual membership fee, each parent receives an adoption certificate for an endangered manatee, the manatee's photo and biography and a membership handbook. Contact Save the Manatee Club, 500 N. Maitland Ave., Maitland, FL 32751 or call 800-432-5646.

### Bad Air Death

Florida divers are pushing for legislation to regulate air fill centers throughout the United States after one diver died from bad air.

Garry Tuomey, 42, of Indian Shores, Florida, died July 4 from drowning associated with carbon monoxide poisoning. He was found unconscious on the bottom during his second dive. According to Pinellas County Detective Tim Pupke, the contaminated air originated from ScubaQuest Dive Shop in Largo. The Bauer compressor had been serviced two days before the accident, Pupke said.



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# AT WHAT AGE?

TEXT BY MELINDA MOORE

A couple of years ago, I had the opportunity to dive with a young lady who was a deck-hand on a small dive boat in the Caribbean island of St. Vincent. She maneuvered herself deftly around the boat, keeping one step ahead of the boat's captain as she tied up to the mooring buoy, assisted the divers with their gear and aided in our underwater tour of a wall dive. She was a confident, controlled diver and obviously had more dives under her weight belt than I did. Her name was Meagan Levis, and she was only 11 years old.

Meagan's grace and underwater skills impressed everyone on board. The boat's captain, Bill Tewes, was also her instructor and mentor. At age 30, I still considered myself a novice. Meagan was evidently more experienced and more comfortable in the water than I was. She, in turn, became a teacher to me.

But I had something that Meagan couldn't get — a C-card.

Major certification agencies will not issue anyone under the age of 12 a junior certification card. Now, at age 13, Meagan has finally received her C-card and has logged a whopping 189 dives.

Tewes, who runs a dive shop on St. Vincent, focuses much of his efforts on teaching children the sport at an early age. Although the children don't receive certification, his age standards for teaching differ from that of industry standards. Tewes will teach almost any 8-year-old who expresses an interest in diving, and some 7-year-olds. Selection depends on size and maturity. "These are not certification courses," he says, "they are learning to dive with me or selected staff."

Tewes finds children much easier to teach than adults. "Kids are used to responding to authority and accept rules and ideas much earlier. They also don't have preconceived fears or prejudiced ideas that we seem to pick up as we get older. And lastly, they really appreciate the beauty of a whole new world. They almost overload the excitement system."

But the major certification agencies still maintain the minimum age for a junior certification is 12 years. A junior open water certification restricts the child to diving with a scuba certified adult and to depths above 70 feet. A full certification is not issued until the age of 15.

Why the age requirement?

In 1986, the major certification agencies held a conference to establish the standards of certification which remain in effect today. It was also during this time that the medical profession began expressing concern for young divers. Brad Smith, an educational consultant for PADI, explains that the decision to restrict certifications to age 12 was due to a combination of factors. The main concern, he said, was the effect that diving might have on bone growth.

Some doctors believe that diving prior to reaching full bone maturity may lead to bone defects or inefficient bone growth for youths. The epiphyseal plates near the ends of long bones are the sites of new bone growth. The risk of deformities increases before these bone plates have been fused. Since the fusing of the plates usually occurs during puberty, some medical professionals advise that children should not dive below 30 feet until their bone growth is complete.

But why 12? Most 12-year-olds have not entered puberty and have not completed their long bone growth, so the bone growth argument becomes irrelevant. As a Diver's Alert Network source points out, "These concerns are purely theoretical and there is no hard evidence to support them."

In fact, no medical studies have been conducted on divers who began their diving at a very early age and no data is available on young divers who have suffered dive-related injuries. We all know of "old-timers" who strapped a tank to their back and jumped in the water before pimples and members of the opposite sex became obsessions. As adults, many of them are at least six-feet tall — no signs of stunted bone development.

Perhaps the certification agencies are too conservative. The fact is there is no medical data, and no magic number. There is no solid medical evidence proving that kids are at a higher risk of injury than adults. Although the purpose for setting the age requirement was clearly to set a standardized practice, it should be a personal choice. I know many 8-year-olds mature enough to dive and many 30-year-olds who aren't.

Since there is no real evidence to support the concern of medical readiness in the form of bone development in youngsters, DAN does not recognize it as a serious issue. DAN's position is that the child's emotional and mental maturity as well as their physical stamina are the most important factors in deciding when a child is ready to dive. "Parents want to make sure the child is capable of handling their own equipment as well as rescuing a buddy," said one DAN representative. Furthermore, age is not as much of a deciding factor in reported accidents as is experience. Statistics indicate an average of less than one percent of all diving accidents reported to DAN occur in the age group between 10 - 14.

Although the age requirement may tip the conservative scale, teaching children younger than the recommended age limits does have its risks. Instructors must be more alert when teaching young divers. Young people may not have all the experience needed to deal with even small difficulties on their own. They may stop paying attention and become lost in the beauty of their surroundings. They may also overreact to fear.

PADI representative Brad Smith still advises parents to wait until their children reach the age of 12 before allowing them to begin their dive training. He also warns instructors that teaching younger children can put their liability insurance at risk.

Scuba diving is a great family activity. It can build a foundation of positive values. They'll learn about taking responsibility for their gear and their buddy's life. They'll learn the value of taking care of the earth and about protecting the ocean's precious resources. And they'll learn the value of a dollar when they realize how expensive the sport can be.

Ultimately, it is the parents who know the limitations of their children, regardless of age. ■

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*STM roving correspondent Melinda Moore is currently exploring the California Coast searching for the ultimate dive.*

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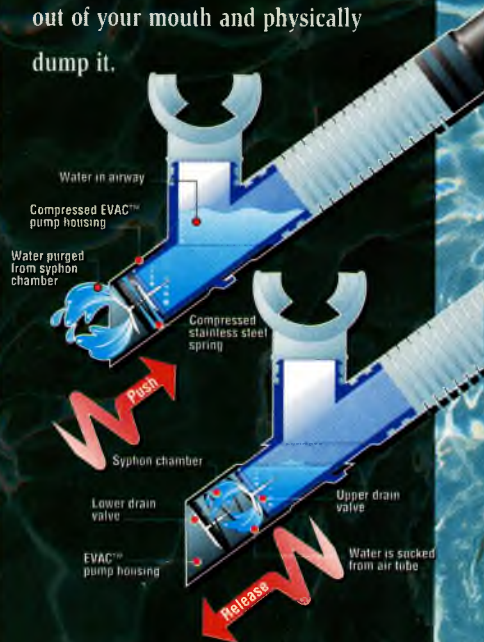
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